

ECONOMIC AND COMMERCIAL GEOGRAPHY

* * * *

[*With a Detailed Treatment of the Indian
Union and Pakistan*]

* * * *

A DAS GUPTA, M.A. (GOLD MEDALIST), B.COM.
*Head of the Department of Commerce Government of
India Delhi Polytechnic Delhi Formerly Professor of
Geography and Commerce Vidyasagar College, Calcutta
Lecturer The Indian Institute of Bankers and Teachers'
Training Department (Geography Dept.) Calcutta Uni-
versity Examiner of Commercial Geography Calcutta
University Author of Economic Geography of Indian
Union and Pakistan*

1949

TWELFTH EDITION

Thoroughly revised

A. MUKHERJEE & Co. LTD. :: CALCUTTA

PREFACE TO THE TWELFTH EDITION

The book has been thoroughly revised and enlarged by considerable additions to the description of countries which have shown recent commercial and industrial development. Detailed treatment is given of Indian Union and Pakistan under separate chapters.

I have given, as far as possible, upto-date statistics and facts of trade and production. The economic implications of recent political changes have also been discussed.

My best thanks are due to Prof. D. R. Mitra, M.A. (Edin.), Bar-at-Law of the Calcutta University, Prof. S. N. Banerjee, M.A., B.Com., R.A. of City College and Prof. Lokesh Chakravarty, M.Sc. of the Government Commercial Institute, Calcutta, for valuable suggestions.

A. DAS GUPTA

23rd June, 1949
Delhi.

PRICE RUPEES TEN & ANNAS EIGHT ONLY

By the same Author—

“ECONOMIC GEOGRAPHY OF INDIAN UNION AND PAKISTAN.”

Revised Third Edition.

Published by A. R. Mukherjee from 2, College Square,
C/o. A. Mukherjee & Co. Ltd, Calcutta, and Printed by P. C. Ray
at Sri Gouranga Press, 5, Chintamani Das Lane, Calcutta

PREFACE TO THE FIRST EDITION

ECONOMIC AND COMMERCIAL GEOGRAPHY has been written mainly to provide, in a small compass, the essentials of World Economic Geography upon a topical-regional basis for students of Commercial Geography in India. The book naturally divides itself into two parts. The first part deals with an outline of the principles of Economic Geography; the second part describes the world, region by region. The book does not lay any claim to originality and I must gratefully acknowledge my obligations to numerous periodicals and publications dealing with Geographical matters for much of material in the preparation of this book.

Dr. S. P. Chatterjee, M.Sc., Ph.D., D.Litt., F.G.S., Head of the Department of Geography, Calcutta University, read the manuscript and offered most helpful suggestions for which I am extremely grateful. For the critical reading of certain Chapters and valuable suggestions made, I am greatly indebted to my former colleagues, Prof. S. N. Chatterjee, B.Sc., Econ. (London), Prof. S. Roy, M.A. and Prof. S. K. Kar, B.Sc., A.S.A.A. (London); to Prof. R. B. Bose, M.A., B.Com., A.S.A.A. (London) of City College, Calcutta; and to Prof. P. Guha of the Jagannath College, Dacca. I must also express my gratitude to my friend, Mr. R. K. Chaudhury, Director of the Hindusthan Cotton Mills Ltd, and the Calcutta National Bank Ltd., without whose encouragement I could not have prepared this volume.

A. DAS GUPTA

Department of Geography,
Vidyasagar College,
Calcutta

CONTENTS

CHAPTER	PAGE
INTRODUCTION	1
Meaning of Economic Geography—its scope—its relation to the other branches of Geography	
I MAN AND ENVIRONMENT	3—19
Physical and non-physical, Physical environment—geographical situation, coastline, rivers, mountains, plains, minerals, forests, fisheries, climate and soil Non-physical factors—race, religion, government and the density of population.	
II NATURAL REGIONS	20—36
Meaning and limitations The types of regions—Wet Equatorial forest region, Monsoon region, Sahara type, Bolivian type, Mediterranean region, China type, Turan type, Iran type Temperate-oceanic region, St Lawrence type, Siberian type, Altai type and Polar region.	
III AGRICULTURE	37—69
Its object and peculiar features—intensive and extensive cultivation Different methods of farming—humid, dry and irrigation The chief agricultural products—food crop : wheat, maize, rye, oats, millets, barley, tea, coffee, tobacco, sugar-cane, sugar-beet, fruits, spices. Industrial crops : cotton, jute, hemp, flax, silk, rubber and oil seeds	
IV MINING	90—124
Its meaning : a kind of robbery. Classification—metallic and non-metallic Iron, copper, lead, tin, zinc, aluminium, platinum, silver, gold, mercury, coal, petroleum, mica, salt, asbestos, graphite, precious stones and building materials.	
V FISHING	125—130
Sources of fish—physical characteristics of fishing grounds—the principal fishing grounds North-eastern sides of North America, North Sea, Continental shelf around Japan and the North Pacific Coast of North America	
VI PASTORAL AND ANIMAL INDUSTRIES	121—136
Importance of livestock. Food, clothing, transport and raw materials other than clothing Food in the shape of dairy produce : Wool for clothing hides, bones and skin as raw materials for various industries the use of animal for transportation.	
VII FOREST AND LUMBER INDUSTRIES	137—141
Utilities of forests—direct and indirect. Different classes of forests—Coniferous soft wood, Deciduous or temperate hard wood and evergreen or tropical hard wood. Distribution of forest areas in the principal countries of the world.	

VIII. TRANSPORT 142—170

Its meaning and importance: different modes of transport—man, animal, river, lake, ocean, canal, railways, roads and aviation. Some important transcontinental railways. The important inland water-ways of different countries. Ocean transport—the principal ocean routes of the world. Ship-Canals—the Suez canal and the Panama canal, the Manchester Ship canal and the Kiel canal. Air-transport—the chief British, French, German, Italian and American routes.

IX. DEVELOPMENT OF PORTS AND HARBOURS . 171—186

Meaning of ports and their functions. Requirements of ports—harbour and hinterland. Qualities of ideal harbour, River ports: Ocean ports, Standard of comparison, Entrepôts: Some important ports. Growth of trade centres—Conditions favouring growth of trade centres.

REGIONAL GEOGRAPHY

X. EUROPE 187—283

A General Survey: causes of greatness: products. U S S R; Switzerland, Hungary, the Balkan States—Bulgaria, Albania, Greece, Yugoslavia, Turkey, Belgium, Denmark, Scandinavia—Norway and Sweden, Iberian Peninsula, British Isles, Germany, Austria, Czechoslovakia, Rumania, France, Italy, Poland, the Baltic States.

XI. NORTH AMERICA 284—305

A General Survey. Canada, U S A, Mexico, Central America, West Indies. Canada—Waterways, railways, agriculture, mining, forests, manufactures, towns and ports. U S A—causes of greatness, agriculture, mining, manufactures, waterways, railways, trade centres. Mexico—causes of backwardness, natural resources, industries.

XII. SOUTH AMERICA 306—317

A General Survey. Causes of backwardness. Political divisions. Brazil, Argentina, Uruguay, Paraguay, Ecuador, Chile, Bolivia, Peru, Columbia, Venezuela.

XIII. AFRICA 318—331

A General Survey: Causes of backwardness. Political divisions—Foreign. British and Independent British West Africa. British East Africa. South Africa: Egypt and Abyssinia.

XIV. AUSTRALIA AND NEW ZEALAND 332—339

A General Survey: Population; climate, waterways, agriculture, sheep and cattle rearing. Mining: exports and imports. New Zealand—Brighter Britain of the South—Economic products.

XV. ASIA 340—373

A General Survey: Japan: The Chinese Republic. Manchukuo. Indo-China, Indonesia, Arabia, Iran, Iraq and Syria. Afghanistan, Israel and Palestine, Asiatic Turkey.

CHAPTER		PAGE
XVI.	INDIAN UNION	374—570
	Natural regions; climate; soil. Distribution of population, races, languages. Agricultural crops—food, fibre, oilseeds and tobacco and rubber. Irrigation. Multi-purpose projects. Forests and their products. Mining; metallic and non-metallic materials; development of power. Livestock: distribution and products. The fisheries. Manufactures—cotton, jute, silk, rayon, sugar, iron and steel, paper, glass, chemicals, automobiles, ship-buildings, aircraft manufactures, cement, matches, etc. Transport—railways, roads, waterways, airways. Foreign trade—imports and their sources, and their destinations; trade relations with different countries. Ports and trade centres.	
XVII.	DOMINION OF PAKISTAN	571—608
	The area and size. Eastern Pakistan and Western Pakistan. Natural regions, Distribution of rainfall, Irrigation facilities and projects, Agricultural products—Wheat, rice, maize, gram, cotton, jute, oilseeds, forest areas and products, Fisheries in Eastern Pakistan and Sind, Distribution of fruits; Livestock and its products; Mineral products—chromite, coal, gypsum, petroleum, salt, antimony, saltpetre, lime stone, etc., Branches of manufactures—distribution in provinces—cotton, sugar, cement, wool, leather, etc., Communications—railways, roads, waterways and airways, Foreign trade—imports and their sources, exports and their destinations, ports and trade centres	
XVIII.	BURMA AND CEYLON	609—616

LIST OF MAPS AND DIAGRAMS

FIG. NO.		PAGE
1.	The Cradles of Civilization	6
2.	The Nile Valley	7
3.	The Wet Equatorial Regions	22
4.	The Monsoon Lands	24
5.	The Tropical Hot Deserts	26
6.	The Mediterranean Lands	27
7.	The Warm Temperate East Coast Lands	29
8.	The Cool Temperate East Coast Margins	32
9.	The Cool Temperate Interior Lowlands	33
10.	Wheat Distribution	40
11.	Area and production of wheat	42
12.	Distribution of Barley, Oats, Rye and Millet	45
13.	Area and Production of Barley	47
14.	Rice Production	49
15.	Area and production of rice	50
16.	Tea, Coffee and Cocoa	57
17.	Tobacco	61
18.	Sugar production	66
19.	Rubber and Cotton	73
20.	Gold Production	91
21.	Distribution of Gold	92
22.	Silver Production	94
23.	Platinum	96
24.	Lead	96
25.	Copper	98

FIG. NO.	PAGE
26. Tin	100
27. Mercury	101
28. Iron	102
29. The Production of Iron Ore	103
30. Petroleum Fields	112
31. Manganese Ore	118
32. Salt	120
33. Asbestos	121
34. The Principal Fishing Grounds	126
35. The Distribution of Cattle	132
36. The Trans-Siberian Railway	147
37. The Canadian Pacific Railway	148
38. The Waterways of Germany	150
38a. The Atlantic Routes	157
39. Ocean Trade Routes of the World	158
40. The Suez Canal	161
41. The Panama Canal	164
42. The Harbour and Port of Glasgow	175
43. The Boston Harbour	178
44. The Ports of San Francisco and Oakland	180
45. Singapore	183
46. The Agricultural Regions of the U. S. S. R.	193
47. The Coalfields of the U. S. S. R.	195
48. Oil and Hydro-electric Powers in the U. S. S. R.	196
49. The Industrial Regions of the U. S. S. R.	198
50. Trade Centres and Ports of the Netherlands and Belgium	213
51. Scandinavia	220
52. Economic Products of the British Isles	228
53. Cotton-manufacturing towns of South Lancashire	240
54. The Chief Manufacturing Regions of the British Isles	243
55. German Waterways	256
56. Germany in 1919	262
57. German Gains, 1933-39	263
58. The Industrial Centres of France	273
59. Agricultural Products of Italy	276
60. Population Density in North America	285
61. Principal Railways of North America	288
62. The Chief Economic Products of the U. S. A.	294
63. The Location of Philadelphia	301
64. South America	307
65. Economic Products of South America	308
66. Political Divisions of Africa	318
67. The Means of Communication in Africa	320
68. The Economic Products of Australia	332
69. The Economic Products of Japan	345
70. The East Indies	364
71. Communications in the Middle East	367
72. Palestine and the State of Israel	369
73. The Direction of the South-West Monsoon	380
74. The Direction of the North-East Monsoon	381
75. Average Rainfall in Undivided India	382
76. Density of Population in Undivided India	388
77. Indian Emigration	390
78. Agricultural Types of India	394
79. Acreage and production of principal crops	397
80. Rice Cultivation in India and Pakistan	399
81. Rice production in Indian Union	401
82. Wheat production in Indian Union	403
83. Wheat Cultivation in India and Pakistan	405

FIG. NO.	PAGE
84. Production of Barley in India	408
85. Tea and Coffee in India	411
86. Sugarcane production in the Union	417
87. Sugarcane Cultivation in India	418
88. Jute Cultivation	421
89. Cotton production in the Indian Union	423
90. Cotton Cultivation in India	425
91. Oil seeds Cultivation in India	427
92. Groundnut in India	428
93. Production of Sesamum in Indian Union	429
94. Production of Castor seed in Indian Union	430
95. Irrigation map of Undivided India	435
96. Canal Irrigation in the U. P.	437
97. Area sown and irrigated in Indian Union	438
98. Hirakud Project of the Mahanadi	442
99. Kosi Project of North Bihar	443
100. Types of Forests in India and Pakistan	447
101. Map showing the areas of sea and riverine fisheries of India	456
102. Iron ore production in Indian Union	460
103. The Iron-ore Fields of Orissa	461
104. Manganese production in Indian Union	463
105. Gold production in Indian Union	467
106. Mica production in Indian Union	469
107. Coalfields of Bengal, Bihar and C. P.	477
108. Hydro-electric Power and Petroleum Centres of India	484
109. Sketch map showing the Cotton, Wool, Iron and Jute Manufacturing Centres	487
110. Sketch map showing the Sugar, Glass and Paper Manufacturing Centres	487
111. Distribution of Spindles and Looms in India	490
112. Situation of Jamshedpur	508
113. The map showing the principal Railway Lines and the Caravan Routes of India	528
114. Sea routes of India	535
115. The Different Lines meeting Calcutta, Bombay & Delhi	537
116. Hinterland of Kandla	550
117. Sketch Map showing the situation of Bombay	557
118. Sketch Map showing Calcutta and its Suburbs	560
119. Grouping of States in India	566
120. East and West Bengal	571
121. East and West Punjab	572
122. Population of Pakistan	574
123. Rainfall Map of Pakistan	576
124. Irrigated and sown area in Pakistan	577
125. Canal Irrigation in the Punjab	579
126. Rice Cultivation in Eastern and Western Pakistan	581
127. Wheat Cultivation in Eastern and Western Pakistan	582
128. Maize in Pakistan	583
129. Gram producing areas in Pakistan	584
130. Sugarcane in Pakistan	585
131. Tobacco in Pakistan	585
132. Cotton in Pakistan	587
133. Jute in Pakistan	588
134. Distribution of Minerals in Pakistan	591
135. Distribution of Industries in Pakistan	597
136. Railways in Pakistan	599
137. Burma	610
138. Akyab and its hinterland	612
139. Ceylon	615

INTRODUCTION

Economic Geography is the study of natural environment and its influence on man's economic activities. It shows how the economic activities of man, so far as they relate to production, transport and distribution of commodities, and settlement of lands are influenced by physical environment. It embraces those physical conditions which affect production, transport and exchange of commodities. It is within the scope of Economic Geography to describe and explain the natural divisions and artificial boundaries of countries, the distribution of population, towns and their industries, and the mode of life of the people.

Economic Geography has two functions. In the first place, it gives a correct account of the existing economic resources of the world ; and in the second, it suggests ways in which the latter may be utilised for the benefit of mankind.

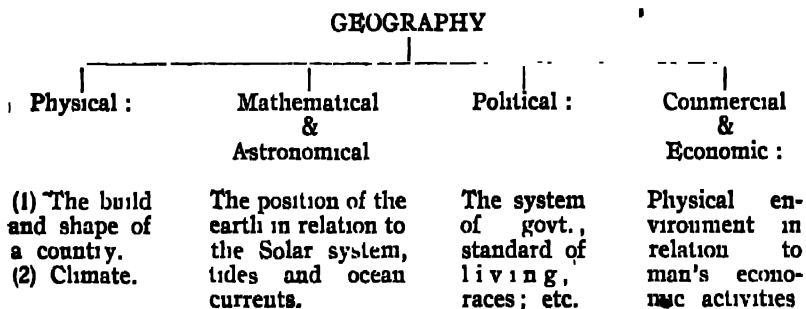
Since Economic Geography presents the actual condition of the *world-workshop*, many of the present-day political problems can also be solved if the subject is properly understood and appreciated

As a branch of knowledge, Economic Geography does not stand by itself. It is related to several other branches of Geography, like Physical Geography, Mathematical Geography, and Political Geography. It is also related to allied subjects like Astronomy and Geology. A proper grasp of these subjects, if not an essential preliminary, is at least very helpful to the understanding of Economic Geography.

The industry and commerce of a country are influenced by geographical features like the build, climate, and surroundings of lands—the subject-matter of Physical Geography, which is thus related to Economic Geography. It is difficult to study the economic conditions of a region without the aid of Political Geography, which deals with the inhabitants, government, institutions and laws. Geology studies the structure and formation of the surface of the earth and primarily deals with minerals, rocks and soils that exert a great influence on man. Mathematical Geography is concerned with the study of the

earth as a planet, its size, shape and movements, and also its tides and ocean currents which greatly affect shipping, climate and vegetation.

Economic Geography is, therefore, a part of the study of Geography.



The mathematical facts of Geography are fixed, unalterable and fundamental ; so also those of Physical Geography when measured by the term of human life. Political Geography alters rapidly and, therefore, observations often pass out of date. But the practical aspects of Commercial Geography change more rapidly. Hence periods in terms of years are mentioned whenever any statement is made as regards production, trade and economic progress of a country.

Political Economy, Anthropology, Sociology, History, Botany, Biology and Chemistry also help the study of Economic Geography by supplying it with useful information.

CHAPTER I

MAN AND HIS ENVIRONMENT

"The mode of life of a people in any region is not an accident but the result of environment." It is one of the most important factors in determining man's needs, productions, habits and modes of life and his degree of progress in civilisation. To-day different countries are at different stages of economic development. In some regions people are active, progressive, industrious and highly commercialized, while in others people are backward and indolent. Some countries are noted for manufactures and others for agriculture. These differences in economic activities may be partly explained by an analysis of the co-relation between man and his environment. The same type of environment may not necessarily produce a common mode of life. Environment offers certain opportunities which men may or may not utilise. Men's ability in exploiting the resources of the environment will depend upon their knowledge, intelligence and culture.

Environment may be physical or non-physical. Economic Geography is mainly concerned with the former. Physical environment includes within its scope the situation, climate, coast-line, topography, natural resources and rivers of a country.

Physical Factors Affecting Commerce

Situation (i.e., location) is a matter of fundamental importance in the commercial development of a region. The situation of a place or a country may be of any of the following types—continental, littoral, isthmian, insular and peninsular.

Russia, Poland, Bolivia and Czechoslovakia afford examples of *continental* location. The important trade routes of the world are far off from these countries. In short, continental locations are remote and isolated from the standpoint of accessibility. A *littoral* location is enjoyed by Norway, Sweden and the Baltic States, from where the world's routes are marginally accessible.

The British Isles, Japan, Italy, India and Newfoundland possess *insular-peninsular* locations. The principal trade routes of the world are openly accessible to them. *Situation is favourable when a country possesses natural frontiers and mild climate and is in close proximity to the world markets with proper facilities for the movement of goods and persons.* Frontiers are important from the point of view of defence, commerce and nationality. There are two types of frontiers—natural and artificial. Natural frontiers are seas, mountains, deserts, swamps and rivers, which make foreign aggression difficult and breed a spirit of independence. The frontiers of the British Isles, being seas on all sides, are not liable to changes due to wars and political revolutions. Hence the economic conditions of this country are free from changes due to alterations of boundary. In Europe, where desert frontiers are absent, the use of the river as a political frontier is very common. The following are some of the examples: (i) the Middle Rhine separates France from Germany, (ii) the Middle Danube separates Hungary from Czechoslovakia, (iii) the Drave separates Hungary from Yugoslavia, and (iv) the Lower Danube separates Rumania from Bulgaria. Artificial frontier means land frontier when it is not marked by clear-cut geographical features like mountains, deserts, etc. It is determined by historical circumstances, agreements, treaties or wars. The frontiers of Poland, Czechoslovakia, Rumania, etc., are artificial and therefore these are frequently affected by political changes. The result is that the trade and industry of these countries are sometimes favourably or adversely affected by changes of boundary.

Britain furnishes an example of a country whose position in the centre of the world has greatly contributed to the growth of her foreign trade. No part of the commercial world is too far from her and she is provided with proper facilities for the movement of goods and persons. Similarly, India, at the centre of the Eastern Hemisphere and with her three sides open for sea navigation, is situated admirably for commerce. The location of Japan in the Pacific Ocean is also an ideal one.

It is easy for a country, situated in the vicinity of industrial areas, to develop trade and commerce. Italy was once a backward country; but in the nineteenth century she borrowed industrial ideas, inspiration and technical processes from the

neighbouring industrial countries. To-day she has become a powerful industrial country. Commerce suffers heavily when the situation is such that physical obstacles are many, boundaries are artificial and water transport is not possible. The locations of Siberia, Greenland, Chile and Alaska discourage a ready interchange of ideas and the growth of commercial relations.

Nature of the coast-line is another geographical factor which influences man in his economic activities. Only a few countries possess no coast-line. Afghanistan, Switzerland and Bolivia are examples of the kind. The coast-line, which plays an important part in promoting or retarding the development of an area, may be of various types—smooth, high, low and broken. To be of commercial service, it must be irregular, that is, broken, so that the sea may reach far inland. By minimizing the violence of the waves, affording protection to vessels and allowing them to reach far into the interior, a broken coast-line makes possible the development of harbours and ports, and consequently contributes to the easy exchange of commodities and the growth of industry and commerce. In Great Britain, which has a largely indented coast-line and where no part of the country is more than a hundred miles off from the sea, the cost of getting exports to the sea is reduced to the minimum and the expense of shipping imports from one port of the island to any other is correspondingly small. The commercial greatness of Holland was partly the result of her broken coasts. It has been said that "the character of the coasts has made the Dutch essentially a commercial nation". By their constant association with the sea, the Dutch have become sea-faring, adventurous and enterprising. It must be admitted, however, that other factors may spoil the advantages which a country usually derives from a broken coast-line. Greece has a broken coast-line and in ancient times the Greeks were a sea-faring and commercial people. The modern Greeks, however, have so far failed to utilise the advantage that Nature has given them; they are neither sea-faring nor commercial.

When the coast-line of a country is regular or high, it is very difficult to construct ports and harbours. Trade and commerce consequently suffer. The coast-line of India is not generally favourable to the construction of numerous ports and harbours, inasmuch as the western margin is regular and open

to the violence of the monsoon and the eastern side is surf-bound. Consequently there are only a few major ports like Bombay, Calcutta, Madras and Vizagapatam along the entire coast-line of India. The vast continent of Africa is equally unfortunate in this respect. The coast-line of Norway, though very much broken, consists in many places of high and steep mountain walls and, therefore, it does not present "opportunities for collecting produce for shipment or for disposing of incoming cargoes".

Of all the factors of physical environment, none has played a more important role than rivers in helping man's progress and civilisation. The four great river-valleys—the valleys of the Nile, the Tigris and the Euphrates, the Indus and the Ganges, and the Hwang-ho—are the cradles of civilisation. Rivers are natural transporting agents; they are essential for the distribution and exchange of goods. Rivers flowing to the wrong

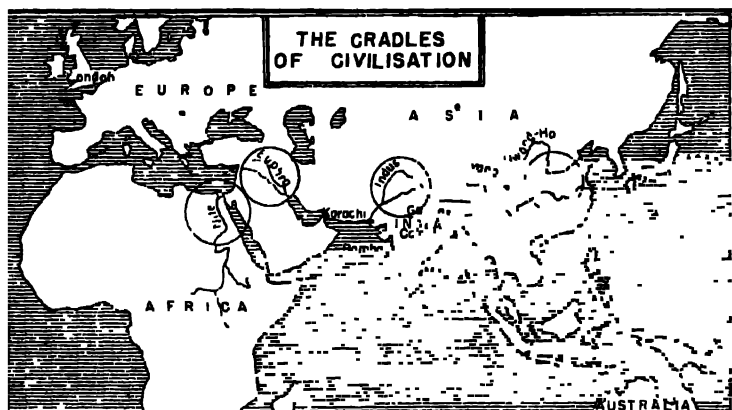


FIG. NO. 1 The cradles of civilisation The valleys of the Nile, Ganges, Hwang-ho and Tigris present favourable geographical conditions for the growth of civilisation These conditions are the fertility of soil, natural protection and climate

directions are, however, of little commercial value. Most of the rivers of Canada and Russia are flowing either to the inland seas of polar regions. To be useful as transporting agents, rivers, should possess certain physical characteristics: (1) They should

be free from ice. When they are ice-bound during winter, like the rivers of Canada and Russia, continuous traffic is impossible.
 (2) They should be deep enough to allow steamers and barges

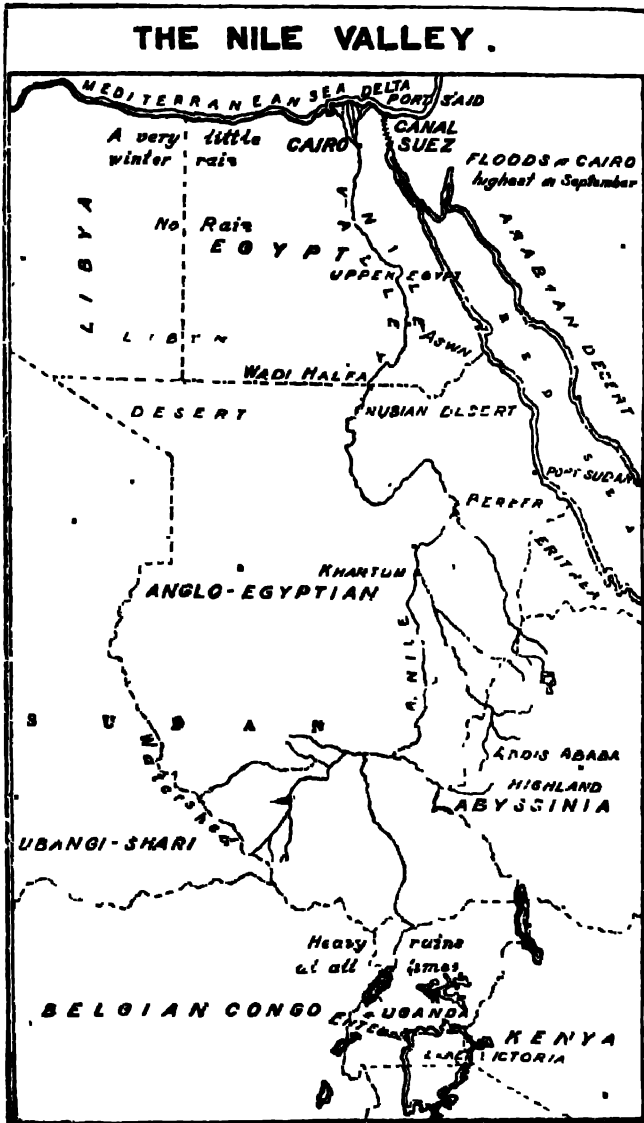


FIG. NO 2. The valley of the Nile invited a settled life in the midst of desert.

to ply. The Congo, Zambesi and Amazon have insufficient depth at places which hinder navigation. (3) They should not have rapids and falls. (4) They should not get dry during summer.

A distinction may be made between snow-fed rivers and rivers fed by rainfall. The snow-fed rivers have, in general, constant flow of water, whereas rain-fed rivers have water during the rainy season only. The rivers of Northern India—the Indus, the Ganges and the Brahmaputra—possess most of the attributes of good navigation. Naturally, they provide highways of carriage and add to the wealth of the vast plain intersected by them. Several thousand miles of canals and channels have been constructed by building dams across these rivers to supply water to millions of acres of land. The rivers of Southern India, on the other hand, not only dry up during summer; they also have rapids and falls. They are all useless for navigation. Brazil, China, Columbia and Russia have poor railway facilities and depend mainly upon rivers for transport. In advanced countries, as in France, Germany and the U S A., the rivers are used side by side with railways.

Apart from their importance as transporting agents, rivers have other uses too. They fertilise the valleys through which they flow. All kinds of vegetation and economic products grow on the river plains. The rivers of Northern India supply soil, manure, moisture and highways of carriage for all the wealth of the plain. Many countries would have remained agriculturally backward for want of serviceable rivers. "Egypt is the gift of the Nile," so goes the saying. Without it, Egypt would have been a desert. The Nile has made the country the granary of Africa, where wheat, cotton, fruits, barley etc., are cultivated extensively. The Nile brings down from Abyssinia fertilising mud and provides the means of irrigation. During the rainy season the Nile rises up by many feet; embankments have been constructed to check flood. The water is distributed throughout the region by canals to provide perennial irrigation for the cultivation of summer crops.

Mountains, as a rule, restrict settlement greatly. High, rugged mountains impose tremendous handicaps upon the movement of people, the spread of population and the building of roads and railways. The population in a mountainous region

is generally sparse, poor and backward. Agriculture is difficult because of the scarcity of level land, erosion of soil, difficulty of using large-scale machinery and the scattered location of the fields. Manufacturing is beset with many obstacles like poor facilities for transportation, dearth of skilled labour and great distance from consuming markets. No wonder, then, that the mountaineers have standards of living lower than those of the people of the plains. Yet mountains offer great benefits in many ways. First, in many countries they are responsible for causing rainfall; they influence the climate by keeping off winds or by condensing them. The Himalayas protect India from the severe cold winds of the North during winter, and during summer they cause rainfall by capturing moisture-bearing South-West winds. Secondly, mountains are usually sources of rivers. The rivers of India flow from the mountains. Thirdly, they afford valuable pastoral grounds. Practically in all mountainous regions of the temperate zone, grazing and stock-raising are the mainstay of thousands of people dealing in dairy products. Fourthly, they are responsible for the growth of forests on the slopes which offer varieties of raw materials for many industries. The great forest region of India is situated on the lower slope of the Himalayas. Fifthly, they are sometimes great store-houses of mineral wealth. In Canada, U. S. A., Mexico and U.S.S.R. many productive mines lie in mountainous regions. In these areas, aerial ropeways are often used. Sixthly, in the tropics the mountains make excellent pleasure and health resorts, particularly during the hottest months. The refreshing air and the beautiful scenery of mountains attract a large number of people from the plains in summer. Lastly, mountains cause waterfalls from which water-power is obtained for the generation of electricity for industrial purposes. Norway, Sweden, Austria, Spain, Switzerland and Italy afford examples where hydro-electricity has been developed because of the existence of many hill-streams and falls. It is, therefore, no exaggeration to say that "the influence which mountains exert on man and his activities is one of the most positive of geographical forces". The water and air in the mountains being pure and wholesome, the mountain people have better health and more energy than the inhabitants of the plains. The mountain people are generally conservative and lead a very hard life. Being detached from outside influences,

these people adhere to their old customs and practices. By nature they are honest and industrious. In recent years the development of communications has to a large extent removed the isolation of many mountain regions and brought the inhabitants into close touch with the world outside.

Though plains occupy about one-half of the earth's surface they are the home of more than 90 p.c. of the people of the world. Plains, when they are not deserts or swamp lands, are densely populated, and people usually settle in them as long as space is available. The economic activities of man are the greatest on the plains, due to many advantages available there. The levelness of relief facilitates agriculture and transportation. The principal agricultural belts of the world are all confined to plains where temperature and soil do not vary suddenly. Plains are convenient for transport. Railway lines are easily constructed, and more than 85 p.c. of the world's railway mileage is found in the plains. The rivers in the plains have slow current essential for navigation. The Rhine, Elbe, Rhone, Danube, Dneiper and Don in Europe, the Mississippi in the U. S. A., the Ganges and Brahmaputra in India and the Indus in Pakistan flow through gentle gradients of the plains, and are, therefore, easily navigable. In the temperate zone, timber is an important product of the plains. The ease of mobility on plains facilitates the exchange of goods and ideas. It is no wonder, therefore, that in agriculture, manufacturing, transportation and trade the greatest development has taken place on the plains. Nearly all the great cities of the world are on the plains.

But all plains are not equally hospitable to human settlement. People do not like to settle on lowlands which have bad climate, poor drainage and unproductive soil. Averse climate may negate all other advantages of the plains. "Some plains are too dry, others, too hot, while still others are too cold for human occupation." The Belgian Congo, the Amazon basin, the Sahara and the Tundra are thinly populated, although these are plains.

Minerals, forests and fisheries are the chief natural resources of a region. The important role played by natural resources in determining the economic life of a nation can hardly be exaggerated. Mineral wealth generally changes the mode of

living. Mining is the chief industry of the mineral areas. Many regions have been industrially developed in course of exploiting mineral products ; South Africa is a prominent example. Gold is abundant there and its development has given rise to many other subsidiary industries in the country. "Gold mines are the back bone of South Africa." Similarly, Australia owes its industrial progress to her mineral products.

In the forest regions, the main industry of the people, as a rule, is lumbering ; other occupations also depend largely on the products of the forest. The forest areas of Norway and Sweden are large ; boat-building, paper and match-making and furniture industries have grown out of the plentiful trees available there. The animals of forest regions supply hide, skin and wool to the world markets. The fur-bearing animals of Canada are abundant in the forest region of the Hudson Bay ; they are trapped and killed for their pelts. The influence of forests on climate is also far-reaching. They arrest the moisture-bearing winds and cause rainfall and as such they are very important in countries where agriculture is the chief industry.

The life, industry and commerce of a country are greatly influenced by the sea, if any. Countries surrounded by oceans and seas in the temperate zone are generally noted for fishing industry. Great Britain, Norway, Nova Scotia, New Zealand and Japan have greatly developed this industry. Fishing in the high seas is the best training ground for shipping. The maritime supremacy of Great Britain is partly due to training and courage acquired by her sons through centuries of fishing in the surrounding seas.

The sea acts as a political boundary and gives protection against invasion. It must, however, be admitted that the advantage of sea as a protection factor has been nullified by the rapid development of aircraft.

Climate exercises a great influence on man. It is everywhere a factor which affects man and his activities. The two fundamental necessities of man are food and shelter and they are determined by climate. Natural vegetation is directly dependent on it and this in its turn is a guide to the kind of activities which will be found suitable to a particular region. Some regions are practically ruled out of account as possible

homes of man. The deserts and snow caps of the world are of this nature ; human life can exist there but only with considerable difficulty.

Climate can influence the development and localisation of certain manufacturing industries The cotton industry requires humid atmosphere for its localisation. The fibres of cotton will break, if they are spun in dry atmosphere. The localisation of the cotton industries in Manchester, Bombay, Ahmedabad and Osaka has been determined by the moist climate of these places. Flour-milling requires dry climate, and is, therefore, localised in Budapest, St. Paul, Minneapolis and Karachi. Even Cinematography is dependent on climate because it requires bright, sunny weather. In like manner, rope-making, printing and paper-making depend on the conditions of weather. Climate also decides the type of manufactures. The climate of India, being hot and moist, favours the development of cotton industry, because the people require a material which must be light to wear. The severe cold during the winter months in Kashmir has directed the growth of woollen industry which can be carried on "indoor" In the present age, however, the localisation of manufacturing industries is not to any great extent controlled by climatic conditions. Science has made it possible to make arrangements for creating necessary air conditions in mills and factories.

Transport is affected by winds, temperature and rainfall. Heavy snowfall may render railway routes and roads temporarily impassable, and low temperature may block rivers and seas with ice. The Baltic Sea is ice-bound during winter and traffic is suspended for that period. The severe winter of North Russia and Canada freezes all the rivers. Air transport also greatly depends on climate inasmuch as it is dangerous to fly in stormy and foggy weather. In the hot deserts, the construction of railways is interrupted by sand-dunes.

The activity of mind and body largely depends on temperature. This is why dwellers in certain regions are most active in body and mind and dominate the world. In the active life of the temperate zone, climate incites man to employ all his faculties for the betterment of his conditions. But the climatic conditions of the tropical zone are not favourable to the development of body and mind ; so progress is slow in these regions.

Climate, therefore, is the main factor in determining the health, energy, productivity and civilisation of the people in any region. The effect of climate on commerce can best be seen from the production of raw materials (except those of mineral origin) in the tropical and temperate zones.

Type	Tropical	Temperate.
(a) Forests	Equatorial and Monsoon. Products :— Sal, teak, mahogany, rubber, cinchona.	Deciduous and coniferous Products.— Oak, beech, pine, fir.
(b) Grasslands ..	Savannas Products — Cotton, maize, coffee	Prairies, pampas and steppes Product.— Wheat
(c) Cultivated crops ..	Rice, millet, jute, hemp, bananas, pine-apples, tea, coffee, sugar	Wheat, barley, oats, rye, flax, grapes, apples, pears, plums, lemons, sugar beet, potatoes

One of the most indispensable natural assets is soil. Our food and clothing and much of our shelter are derived directly or indirectly from soil. Population is always dense where the soil is fertile because of agricultural possibilities. Agriculture is always the basic industry in fertile regions. Quality of the soil has made agriculture an important source of wealth in India, China and the U. S. A. Soil is considered fertile when it contains an abundance of plant food in such a state that the plants can appropriate it as needed. There are different kinds of soil. A sandy soil is one whose composition is nearly three-fourths sand. A clay soil is about half clay, while a lime soil is about one-fifth lime. A peaty or vegetable soil is made up of peat or vegetable matter. Loams are soils containing a mixture of clay, sand, lime and decayed vegetable matter known as humus.

The form and size of a country also play a significant part in the national economy. Form may be compact, fragmented or attenuated. *A compact form* like that of U.S.S.R. or Rumania or India or China presents excellent transport facilities and opportunities for political unification. *A fragmented form*, as

in the case of Greece, imposes barriers against the movement of goods and ideas. *An attenuated form* like that of Chile (long but not wide) hinders farming operations.

The size of a country may be small, large or gigantic. A small country with an increasing population cannot depend on agriculture as the main industry. As the land is limited, agricultural produce cannot be large. Intensive cultivation may be practised, scientific manuring and other improvements may be introduced ; but there is a limit beyond which the produce will not increase. Hence people are compelled to develop other industries, and ultimately foreign trade becomes more important than internal trade and agriculture. Great Britain, Belgium and Japan are small countries with vast populations, where there has been great development of manufacture and foreign trade. A large country, on the other hand, like China or India, with dense population will cause both agricultural and manufacturing industries to develop. But it may not have a large volume of international trade, because the bulk of its products may be required for the consumption of its people. Scanty population in a large country gives rise to stock-raising, as for example in Central Asia, Argentina and Uruguay.

The increasing pressure of population in smaller countries necessitates migration. Emigration from European countries to foreign lands became frequent after the beginning of the Industrial Revolution (which led to a rapid increase in population) in the eighteenth century. It is interesting to note that the European peoples have always migrated to temperate lands or to regions having temperate climates. Thus, Canada, U. S. A , Mexico, Brazil, Argentina, South Africa, Patagonia, Temperate Australia and New Zealand have been colonised by the Europeans.

The term *colony* must be distinguished from dwelling or settlement. A *colony* is a possession "in which definite settlement takes place wholly or mainly by people from the home country".

Non-Physical Factors Affecting Commerce

The economic activities of man are to a great extent determined by the character of the race, religion and govern-

ment. These constitute the social (i.e., non-physical) factors affecting commerce.

The economic importance of race is very great. The human race is divided into three principal colours—Black, White, and Yellow. These great races of mankind share the world's commerce unequally. The characteristics of the white peoples are an oval face, regular features, straight eyes, a finely-cut nose and white or light skin. It is generally found that the regions inhabited by the white people are commercially and politically developed to a high degree and that the control of the world trade is entirely in their hands. Their commercial and political supremacy is largely due to climate, which has made the race persevering, energetic and intelligent. "This race has exercised a great influence on the development of civilisation, in the establishment of sound social institutions, the free regulation of political and economic life and in the domains of Science, Technology and Art." The White Race includes the greater part of the inhabitants of Europe, North America, India, Middle and Near-East including Egypt and North Africa. The Yellow Race inhabits chiefly Northern-Eastern and Central Asia and has its greatest concentration in China and Japan. It is advanced in civilisation and takes an important part in trade.* The peoples have short statures, yellow skins, flat faces and narrow slanting eyes. The Black Race occupies the tropical regions; it is the least civilised and takes a small part in trade. It shows in the most pronounced way the enervating and degrading effect of tropical heat and luxuriance. "In the case of the Negro, climatic influences—acting direct and through the tropical food—lead to the early closing of the 'seams' between the bones of the skull; and thus the development of the brain is arrested, and the adult is essentially unintellectual." These peoples have dark skins, flat faces, broad noses and coarse and projecting lips.

The races are also sometimes called (a) the Caucasian, (b) the Mongolian, and (c) the Negro.

* China, India, and Japan are fast developing industries and manufactures; production, in both raw materials and finished goods, is increasing rapidly. New shipping routes are being established and new markets are growing. The importance of the Pacific is growing more and more and already much of the trade of the Atlantic has come to it.

DIVISION OF THE RACES AND THEIR NUMBER

Caucasians	...	...	...	726,000,000
Mongolians	...	...	...	665,000,000
Negro	...	...	...	190,000,000
Malayan	...	...	...	52,000,000
Red Indians	...	...	...	23,000,000

1,656,000,000

The four main religions of the world are :—(1) Christianity, (2) Buddhism, (3) Islam, (4) Hinduism.

Influence of religion on man's economic life cannot be ignored By prohibiting certain activities and restricting others, the injunctions of religion not only regulate man's philosophy of life but also formulate the nature of his economic activities and ideals. Buddhism, with its doctrine of *Ahimsa*, has made its followers in China and Japan averse to stock-raising for meat and wool.

The eastern regions of the Mediterranean, which are favourable for the vine, have not developed any wine industry because the population is predominantly Muslim, to whom wine is prohibited by religion. There is however much demand for coffee in place of alcohol in these countries. Among the Muslims banking institutions have not developed because Muhammad prohibited acceptance of interest from borrowers. There are more than 300 millions of Muslims in the world. North Africa, Western and Central Asia, Pakistan, North-Western China, Dutch Guiana in South America, Albania, Turkey and Kirghizia (U. S. S. R.) contain a large Muslim population. For religious reasons these lands have hardly any pigs.

The Hindu society, whose numerical strength exceeds 215 millions, is divided into different castes to each of which occupations and duties are prescribed by religion. People of one group or caste are not generally permitted to follow the profession of other groups. Supply of labour for each group is thus fixed, and it is difficult to develop large-scale production. The pressure of Western ideas and the requirements of modern economic

organisation have however relaxed the rigidity of the caste system to a great extent so far as its economic aspect is concerned.

Christianity admits of no such peculiar restrictions. To the liberality of its principles the progress of Europe and America can be partly traced. Christianity includes three different varieties: Roman Catholic, Protestant and Greek Apostolic. The number of Roman Catholics is the largest and is estimated at more than 330 millions. They predominate in South, West and Central Europe, South America (excluding Brazil and Argentine), Mexico and the north-east of the U. S. A. The increasing domination of the Christian peoples over the earth, the gradual acceptance in all countries of their civilisation and the progress of modern education and culture are all weakening the influence of religion on the economic activities of man. But in the backward countries religion still remains a vital factor in economic organisation.

The commercial progress of a country is largely affected by the character of its government. Bad government always retards industry and trade; good government promotes them. In Mexico the natural wealth is vast, but as the government is not stable, revolutions and banditry are frequent, commerce is unprogressive. The absence of a strong and powerful government has made China a poor country in spite of her vast natural resources. Japan has industrialized herself completely with the help of the state which took the initiative in starting model factories and mills. Before the first World War the German Empire extended her commerce with the active support of the state.

The extent and density of population in any area influence commerce to a certain degree. The population of the world is generally distributed according to the possibility of obtaining food directly or indirectly. The largest volume of commerce can grow in densely peopled areas, since sparsely peopled regions need little to purchase and have little to sell. An area may be rich in natural resources but unless it is well populated, the resources will not be exploited because scarcity of population means lack of capital and labour. The most densely populated parts of the world are usually (a) in the neighbourhood of coal and iron mines which form the basis of the

FACTORS AFFECTING COMMERCE

Physical					Non-Physical			
Climate	Situation & Size	Topography	Soil	Rivers	Natural resources	Coast-line	Race	Density of population
(a) Production. (b) Transport. (c) Labour (d) Industry	Defers mine commerce inter course	(a) Plain favours settlement, develops agriculture, transport & commerce (b) Mountain - sparse population, minerals found; forests abundant; water-power available	Vegetation	(1) Natural transporting agents (2) Fertilizers of valleys (3) Develop hydro- electricity (4) Favour growth of towns and cities	Fishing, Mining, Lumbering	(a) Regular unfit for ports (b) Irregular excellent for ports	White - prominent in industry Black - least civilized; Yellow - progressive	Govt. Religion Encourages or discourages certain occupations but gov't & consumption of cer- tain goods Good-govt promotes commerce hinders it Dense population - Agriculture and Manufac- tures.

MAN AND HIS ENVIRONMENT

manufacturing industry, (b) along some sea coasts where the cheapest commercial routes are at hand, and (c) in the monsoon lands of South-East Asia.

The great deserts of North Africa, Arabia and Australia, parts of the arid interior plains and the basins of Asia and North America, the extensive coniferous forests and the Tundras of the North, together with the Savannas and forests of the monsoon region of Australia and a large proportion of the Savannas and equatorial forests of South America are practically uninhabited.

QUESTIONS

1 "The mode of life in any given region is not an accident but is a product of environment" Explain this statement —(I.P.S. 1931)

2 "The nature of coast-line of a country affects its commercial and industrial development to a great extent" Discuss this statement with at least two examples. —(Cal Inter 1926).

3 Write a short essay on the effect of climate on manufacturing industries —(Cal Inter. 1933, 1937)

4 Write a short essay on the effect of climate, both direct and indirect on the industries of a country Illustrate your answer with some conspicuous examples • —(Cal Inter. 1926, 1942).

5 "The race, government and religion influence the commerce of a country to a certain degree" Support this statement by illustrations —(Cal B Com 1923)

6 "The three great rivers of Hindustan supply manure and moisture and highways of carriage for all the wealth of the plain" Explain this statement and name the three rivers. —(Cal. B. Com 1923)

7 Give an account of the chief factors which determine climate. Illustrate your answer with reference to the continents of the world.

8 "Man's character and occupation have been decided by the geographical conditions under which he lives" Illustrate this remark with reference to Japan and India —(Indian Institute of Bankers, 1939).

9 "The general configuration of a country affects her agriculture and commerce in many ways." Discuss this statement.—(I. I. B. 1940).

10 Write a short essay on any one of the following: (i) Land configuration as a factor in economic geography, (ii) geographical location —(I. I. B 1941).

11 "No factor of his environment exercises a wider influence on man and his economy than climate" How far is this remark true? Give precise illustrations. —(Indian Institute of Bankers, 1940)

12 "The human habitat is influenced largely, if not wholly, by the soil and the climate in which man lives" Illustrate this statement with reference to examples. —(Dacca Inter 1941).

CHAPTER II

THE CLIMATIC AND NATURAL REGIONS

The same type of climate does not prevail all the world over. Some countries have hot climate, some possess mild climate and others have extreme or cold climate. Economic products vary with differences in climate. Despite these differences, we find on comparison that an area in one part of the world has almost identical climate, animal life, vegetation and occupation as that of another situated far away. It has thus become possible to divide the world from the standpoint of climate and production into a number of natural regions.

Prof. Herbertson defines *natural region* as "an area of the earth's surface which is essentially homogeneous with respect to the conditions that affect human life." Within each natural region, climate, vegetation and general methods of living are similar.

In speaking of natural regions, the following considerations should be noted: The physical conditions are never fully identical in any two widely separated areas and, therefore, it must not be supposed that because they are classified as belonging to some particular type of natural region, they have all conditions in common. Secondly, the classification of natural regions, primarily on a climatic basis, is at best an approximation and the placing of regions in a particular category means that they have more resemblances than differences in common. Thirdly, the limits of any natural region are also approximate. The change from one natural region to another is often very gradual and not abrupt. Fourthly, natural regions do not conform to political boundaries.

The study of natural regions is of great practical importance because the lands in each region can be developed on similar lines. The East Indies, Brazil and Belgian Congo belong to a common natural region. If rubber can be grown in Brazil and Congo there is no reason why this plant cannot be raised in

the East Indies. As a matter of fact, thirty years ago, Brazil and Congo had monopoly in rubber supply. But subsequently, rubber plantations were opened in the East Indies and Malaya from where more than 90 p.c. of the world's rubber is put in the market today.

1. *Types of Tropical Hot Lands*
 - (a) Wet Equatorial Forest Region or Amazon Type.
 - (b) Monsoon and Sudan Regions.
 - (c) Western Desert or Sahara Type.
 - (d) High Plateau or Bolivian Type.
2. *Types of Warm Temperate Lands*
 - (a) Western Marginal Region or Mediterranean Type.
 - (b) Eastern Marginal Region or China Type.
 - (c) Interior Lowland or Turan Type.
 - (d) Interior Highlands or Iranian Plateau.
3. *Types of Cool Temperate Lands*
 - (a) West European Regions or Temperate Oceanic Region.
 - (b) Eastern Region or St. Lawrence Type.
 - (c) Interior Lowland or Siberian Type
 - (d) Interior Highland or Altai Type
4. *Polar Region*

1(a). Wet Equatorial Forest Region or Amazon Type

The climate features of this region include high temperature, very slight seasonal changes and heavy rainfall throughout the year. Temperature is high because the sun always shines from a very high position in the sky. Again, the constant excessive heat keeps the air warm and makes it expand and rise. On reaching higher levels, it cools so much that its moisture is condensed and then falls as rain. Equatorial areas are, therefore, wet as well as hot. The chief areas belonging to this region are the Amazon basin, the Congo basin, Malaya Islands, East Indies and the coastal plains of Columbia in South America. In these areas dense vegetation covers everything. Huge trees of great variety spread out their branches and make the lower part of the forest half dark. *So the equatorial regions are sometimes described as regions of twilight.*

PENANG (S. E. ASIA), HEIGHT 23 FT.

	J	F	M	A	M	J	J	A	S	O	N	D
T°F	79.7	80.1	81.3	81.7	81.5	80.6	80.2	79.9	79.5	79.7	79.2	4.8
Rain	3.9	3.0	4.7	7.0	11.0	7.2	8.9	12.8	19.0	16.1	10.9	78.8

"Human life in such a region has altered little since the earliest days of man's occupation of the Earth. The climate encourages indolence, and needs are few, for an abundance of food is obtainable without effort and the requirements as to clothings and shelter are at a minimum".

Some parts of the equatorial region contain valuable minerals: tin in Malaya Peninsula and the East Indies, graphite in Madagascar and Ceylon, bauxite and manganese in the Gold

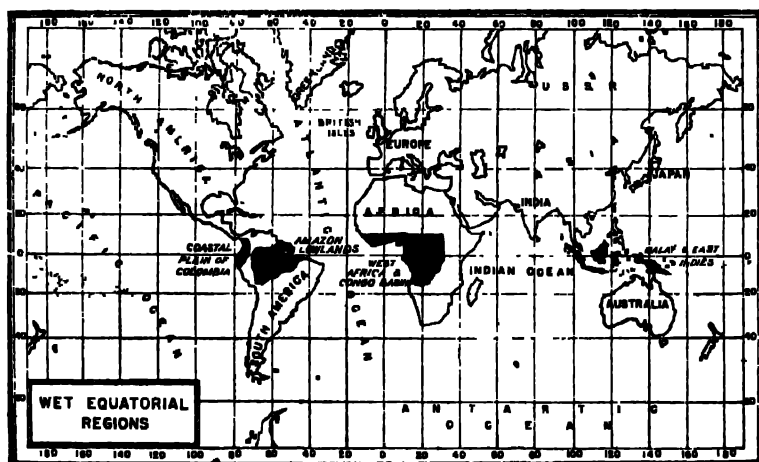


FIG. No. 3 Distribution of equatorial lowlands—the Amazon basin is the most typical.

Coast. The region also enjoys monopoly in the production of bananas, cabinet-woods, spices, rubber, cocoa, dye woods and ivory—all of which are in great demand in Europe and America. Bamboo is a typical product of these regions. Important commercial products of wild growth are spices, guttapercha, palm, oil-nuts, coffee, cocòanuts, sago, bananas, resins, lac, myrobalans and chiele (chewing gum). The animals of the equatorial region have developed wonderful flying or climbing abilities.

Birds, insects, reptiles and monkeys are abundant here. Elephants, tigers, leopards and rhinoceroses are also found. Fur-bearing animals are practically absent.

There are certain serious obstacles in developing these regions. Of them the most prominent are odious climate, diseases, poor soil, dense forest, paucity of food and the difficulty of using animals. In the Congo basin the natives are indolent, dwarfish in size and mentally unfit for any original work. They wear little or no clothing, worship spirits and practise *head hunting* even to-day. It is not possible for white people to work in these areas because of high temperature. The means of communication are practically absent; the swampy nature of the lands and the forests make the building of roads and railroads difficult. The rivers and streams serve as the only methods of inter-communication. The East Indies has developed commerce and industry to a great extent because its favourable situation has offset the difficulty of communication and labour. It has become a great producer of sugar-cane and the largest supplier of rubber.

THE PRINCIPAL EXPORTS OF THE EQUATORIAL FOREST LANDS

Areas	Chief Exports	Ports
South America ...	Rubber, timber, sugar, rice, bananas, coffee, nuts, copper.	Para, Bahia, Pernambuco, Paramaribo, George Town.
Africa	Copper, gold, rubber, timber, palm oil, kola nuts, cacao	Lagos, Accra, Free Town.
Asia ...	Tin, rubber, pepper, copra, pineapples, cacao, coffee	Singapore

1(b). Monsoon and Sudan Regions

The chief areas are India, Eastern Pakistan, Burma, Siam, Indo-China, Philippine Islands, Southern China, Central America, West Indies, Caribbean Sea board (Venezuela and Columbia), East Africa Coast Lands, Madagascar, Queensland and North Australia Coast Lands. The monsoon regions mostly occupy the eastern margin of the continents.

High temperature throughout the year and heavy rainfall during summer are the main characteristics of this region. In

summer, these areas become so hot that the air becomes thin and rises higher up ; the cool air from the sea comes in to take its place, thus causing rainfall. "Monsoon lands are dominated by winds from the sea to land in summer—the wet season, and by winds from land to sea in winter—the dry season."

The distribution of rainfall in the monsoon lands depends upon relief features. Lands having mountains opposite sea receive heavy rainfall Cherrapunji at the foot of the Shillong plateau in Assam has about 500" rainfall—heaviest in the world.

The climate is not generally conducive to physical or mental vigour, but it is more healthy and less enervating than the Amazon climate.

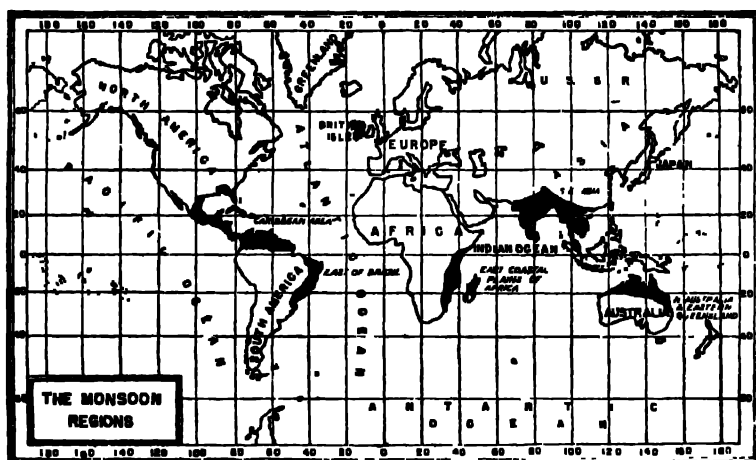


FIG. No. 4 Distribution of the monsoon lands Note that Japan and N E China are not classified with the monsoon countries, though they are subject to monsoon winds Winters are too cold in N E. China and Japan

TYPICAL MONSOON TYPE (ALLAHABAD)

(Inland, Altitude 309 feet Lat 35° 28' North, Long 81° 45' East)

Month		Jan	Feb.	March	April	May	June
Temp ..	..	59.5	64.9	76.8	87.6	92.5	90.8
Rain (inches)		7	.5	3	.1	3	4.5
Month	July	Aug	Sept.	Oct	Nov	Dec	Year
Temp ...	..	84.5	83.3	77.6	67.5	59.8	77.3
Rain (inches)	.	11.4	6.0	2.2	2	2	37.5

The products of natural vegetation are teak, sal, sandalwood, lac, bamboos, gum and camphor. Sal and teak are found

in Burma, Indo-China, Thailand and Java. Sandal-wood and lac are the products of the Indian forests. Bamboos and gum are found all over the monsoon lands.

Agriculture is the main occupation of the inhabitants of all the monsoon lands. Palm, bamboos, hard woods, rice, maize, millet, sugar-cane and cotton are grown nearly all over the region. Coffee, tea, cocoa, tobacco, indigo, cinchona, jute, rubber, oil-seed and pulses are other important crops which grow in these areas.

In monsoon regions man's well-being depends largely on rainfall. "Probably there is no other single group of weather phenomena which is so far-reaching in its effect on man's economic life as the rain in these areas". If the monsoon fails the agricultural products will not grow, and as a result, famine will break out. So complete is the dependence of the people on monsoon for agriculture, and so utterly unable are they to cope with its uncertainty, *that they have become fatalists of the most extreme kind*. The density of population being the highest in these regions, the pastoral industry has not developed, for it requires extensive lands. Mining is receiving attention now-a-days in Burma, India and China. Northern Australia produces cocoanuts, rice, bananas and cotton. That region is capable of further agricultural development, but the unfavourable climate does not permit white labour to settle here. Nor is Asian labour used because of the *White Australia* policy of the Commonwealth Government.

1(c). Western Desert or Sahara Type

The hot deserts of the world are generally situated near the tropics and only on the western sides of the land masses. These areas are Sahara in Africa, Arabia, Thar in India, Colorado in the U.S.A., Peruvian and Atacama deserts in South America and the Great Sandy Desert of West Australia. Deserts occupy about one-fourth of the land surface of the earth.

Rainfall is scanty throughout the year, the mean annual rainfall being less than 3 inches. Clouds are few; sun-shine is abundant. The summer is very hot, but nights are usually cooler than days, and in winter the temperature is very low. The climate is not, however, unhealthy in these regions. Travel

in these areas is often disturbed by clouds of dust swept along by strong winds. In Sahara the dust storm is known as *Simoom*.

The deserts have little economic value and hinder the development of the lands near them because of the difficulty of crossing them.

The characteristic date palm and fig tree provide man's material needs in the deserts. Wheat, millet, Mediterranean fruits, cotton and sugar-cane are grown in the irrigated areas of deserts. Cattle-rearing and trade in dates, salt and leather goods

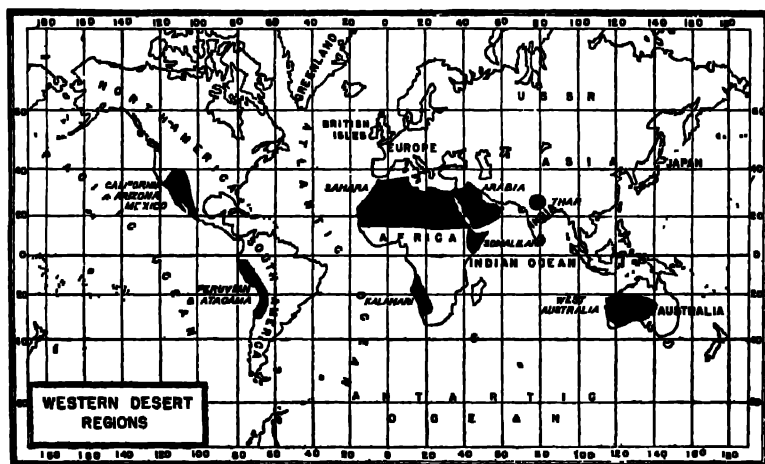


FIG. No 5. Distribution of tropical hot deserts. Note the absence of hot deserts on the eastern margins of the continents

are carried on. Hot deserts are all regions of privations or of lasting difficulty. Frequently a small and isolated oasis supports a scanty population. Camels, sheep and goats are reared. The people are generally fearless and reckless, but faithful and hospitable.

Some of the deserts possess useful minerals, although, curiously enough, their concentrations are found mostly in the Southern Hemisphere—oil in Peru; nitrate and copper in the Atacama desert of Chile; diamond in the Kalahari desert of Africa; gold in West Australia; lead and zinc in the desert region of New South Wales. In the Northern Hemisphere

the important mineral-bearing deserts are Sahara for salt, Colorado for gold, Iraq for oil. These deserts are being developed and worked with capital from England and the U.S.A.

1(d). High Plateau or Bolivian Type

The highlands of the tropics include the Bolivian Plateau, Himalayas and Tibet. Different grades of climate are found in these areas according to height, which accounts for the difference in cultivated products. Sugar, wheat, maize and fruits flourish on the hill-slopes of the Andes, and tea on the slopes of the Himalayas. Tibet is largely a land of ice and snow, but agriculture is carried on in the valleys and fruits are cultivated. Yak, asses, cattle and sheep are reared in the lower areas.

2(a). Western Marginal Region or Mediterranean Type

It includes the Mediterranean lands (comprising Spain, Portugal, Southern France, Italy, Yugoslavia, Balkan countries, Syria and North Africa), the Pacific sea board of North and

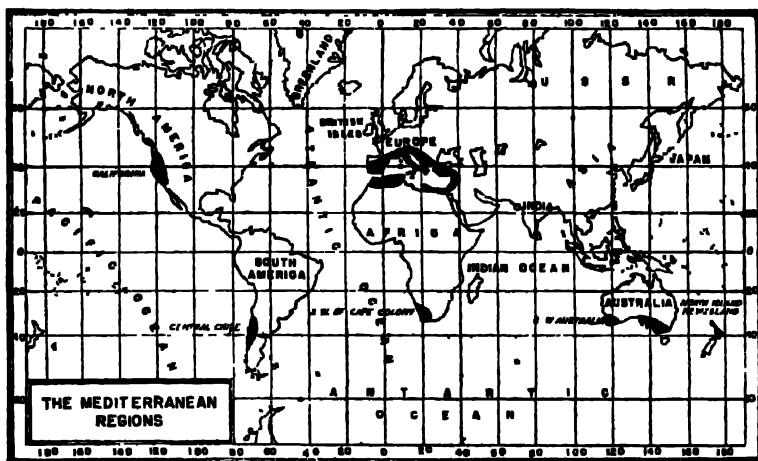


FIG. No. 6 Distribution of the principal Mediterranean lands. These lands are also known as 'Winter rain' regions

South America (California and Central Chile) and the south-western extremity of South Africa and Australia (the south-west

of Western Australia, the south of South Australia and North New Zealand). As opposed to the monsoon regions, the Mediterranean lands are mostly situated on the Western margins of the continents.

The distinguishing climatic features are the following :—

(a) Most of the rains fall in winter and there is drought in summer, (b) winters are mild, and (c) skies are very sunny, being almost cloudless in summer.

The Mediterranean lands have rainfall between 20" and 30". These lands have mostly seas on one side and mountains on the opposite. In areas where mountains are absent, the rainfall is scanty and desert conditions prevail

GIBRALTAR (MEDITERRANEAN TYPE) COAST HEIGHT 53 FT.

Month	Jan	Feb	Mar	Apl	May	June	
T°F ..	55	55.9	57.4	60.6	64.7	69.5	
Rain (inches)	5.1	4.2	4.8	2.7	1.7	.5	
Month	July	Aug	Sept	Oct.	Nov	Dec	Year
T°F ..	73.4	74.9	72.0	65.7	60.5	56.1	63.7
Rain (inches)	4	1	1.4	3.3	6.4	5.5	35.7

The pleasant climatic conditions of these lands invite tourist-traffic, specially during the winter.

Vegetation grows almost all the year round. The best known characteristic plant is the olive which grows throughout the year. The cork oak, the sweet chestnut and mulberry are other useful trees. The region is mainly noted for fruits like orange, lemon, peach, apricot and fig, which are in great demand in other parts of the world. Cereals like wheat and barley are grown as winter crops. Though grapes are extensively grown all over the Mediterranean region, only a few countries specialise in wine-manufacture. France, Portugal, Italy and Spain produce wine.

Fresh grapes are exported from Spain and California and dried grapes in the form of raisins from Asia Minor and California. Figs are famous in Asia Minor.

Where conditions are suitable, horses, cattle, sheep and pigs are reared. Asses, mules and goats are typical animals.

Manufactures have greatly developed in France, Spain, Portugal and Italy. The silkworm of mulberry trees has made the Mediterranean region noted for fine silk fabric. Man's struggle for existence is not severe, because the climate of these lands is highly suitable for crop production. Moderate effort is needed to gain a living from the land.

2(b). Eastern Marginal Region or China Type

The chief sections of the region are North and Central China, Western Korea, Southern Japan, eastern side of the U S A. (approximately Iowa, Missouri, Arkansas, Eastern Texas and Gulf Coast), South-Eastern Brazil, Uruguay, South-Eastern coast land of the Union of South Africa, sea board of New South Wales and Southern Queensland.

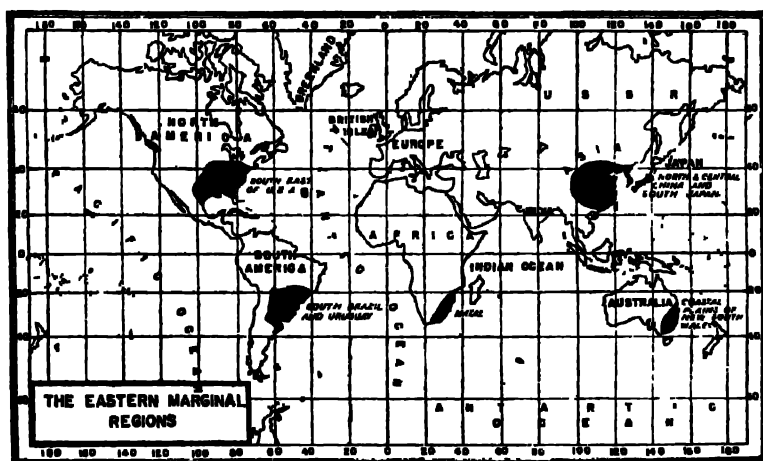


FIG. No. 7. Distribution of lands with Warm Temperate East Coast climate.

These areas get summer rains. Very hot summer and very cold winter are the peculiar climatic features in these areas.

HANKOW (CHINA) INLAND HEIGHT 118 Ft.

Month	Jan.	Feb.	Mar.	Apr.	May	June
T [°] F	39.6	41.5	48.2	61.2	70.9	77.9
Rain (inches)	2.1	1.1	2.8	4.8	5.0	7.0

Month		July	Aug.	Sept	Oct	Nov.	Dec	Year
T°F.	...	82 9	83·3	74 8	65 1	53 1	42 6	61 9
Rain (inches)	...	8 6	4 6	2 2	3 9	1·1	0 6	43·8

The valuable trees are yellow pines, walnut, chestnut, beech, magnolia and oak. The important crops are maize, millet, pulses, rice, indigo, tobacco, cotton, camphor, tea, banana, orange and coffee.

Population being very dense in the Asiatic lands, domestic animals are few ; but not so in Uruguay, Brazil and South Africa where cattle-rearing has developed greatly. Manufactures are well developed in southern U S.A. and Japan.

2(c). Interior Lowlands or Turan Type

The major sections are Turan, Trans-Caspian and Caspian districts in Russia, Danubian Plains (Rumania and Hungary), Manchuria, West-Central States of the U. S. A, North Argentina, interior parts of New South Wales, Victoria and South Australia.

These lowlands have extreme climate and scanty rainfall. Cattle, sheep, horses, camels and goats are reared. With the help of irrigation maize, barley, fruits and cotton are grown.

2(d). Interior Highlands or Iranian Plateau

The chief areas are Iran, interior of Asia Minor, Afghanistan, the western part of West Pakistan, interior lands of the Southern States of the U. S. A., Mexico and interior lands of South Africa.

The climate of these highlands is extreme. The rainfall is very small and lands are either poor grass-lands or actual deserts. Generally agriculture is impossible ; but not so in areas where mountain streams and oases are found, and irrigation methods are pursued. The chief agricultural products are cereals, fruits, cotton, tobacco, sugar-cane, beet and roses. Cattle, sheep, horses and camel feed on the richer grass-lands. Though mineral wealth is great, it is not exploited for lack of labour and capital. Manufactures are carried on, on a small scale.

3(a). West European Regions or Temperate Ocean Region

The typical sections are British Isles, South-Western Scandinavia, Denmark, Western Germany, Holland, Belgium, France, Northern Spain, South-West Canada, North-Western States of U.S.A., Southern Chile, Tasmania and New Zealand.

These regions have moderate rainfall throughout the year, as well as mild temperature. The mild climate is primarily the result of oceanic influence. Warm ocean currents flowing to the west of these regions make the winds warm and supply them with moisture.

LONDON (INLAND) LAT. $51^{\circ} 28'$, $0^{\circ} 19' W$. HEIGHT 28 FT.
ABOVE SEA LEVEL.

Month		Jan	Feb	Mar.	Apr	May	June	
T°F.	..	38 9	40 1	42 4	47 3	53 4	59 2	
Rain (inches)	...	1 8	1 5	1 7	1 5	1 7	2 1	
Month		July	Aug	Sept	Oct	Nov	Dec	Year
T°F.	...	62 7	61 6	57 1	49 9	44	40 3	49 7
Rain (inches)	..	2 2	2 2	1 9	2 7	2 2	2 3	23 8

Maple, oak, elm, and beech flourish in the warm lowlands. Coniferous trees like pines and firs grow luxuriantly in the cooler and damper up-lands. Oats, rye, potatoes, beet and vegetables are the chief crops. Wheat grows best in the drier parts with sunny summers. Cattle, horses and sheep are also reared. Easy access to markets has helped the growth of dairy farming.

In the western part of Scandinavia and British Columbia fishing is more important than agriculture.

These areas are highly developed in commerce and industry. The development is particularly great in Western Europe where mineral resources are vast, transport facilities excellent, climate best suited to human energy and situation ideal for trade. "Britain leads in commerce and colonisation, France in romantic thought and taste, Germany in technical research. Agriculture is highly scientific and manufactures and commerce have reached the highest degree of development and progress yet known". Canada, U. S. A., Australia and New Zealand are also making rapid progress in manufactures and transport.

3(b). Eastern Margin of Cool Temperate or St. Lawrence Type

The main areas are the Amur Valley, Armenia, Korea, Northern Japan, St. Lawrence basin (Eastern Canada, and Labrador, South of the Tundras, East of the Prairies), Newfoundland, U.S.A. (North-East and higher Appalachian slopes) and South-East Argentina.

These areas receive a small amount of rainfall which comes mostly in summer. Temperature is low during summer and very low during winter. The rivers and harbours are generally ice-bound in winter.

Forests of commercial value are abundant in this region. North-East America and Asia have coniferous and deciduous trees, which are important for fur-bearing animals. In the

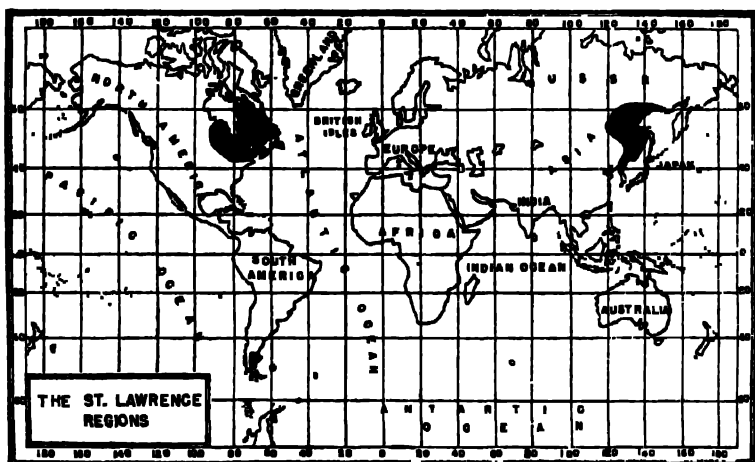


FIG. No. 8. The eastern margins of the cool temperate regions. Note the absence of such lands in Africa and Australia.

cleared areas, agriculture and dairying are practised. Lumbering is important in North America. In Canada and the U.S.A. fishing, mining, agriculture and manufacture have developed. In Asia, Japan occupies the premier position in manufactures. In Manchuria, agriculture and mining are developing rapidly under Japanese guidance and patronage.

3(c). Interior Lowland or Siberian Type

The conspicuous areas are Central lowlands of Asia, Poland, European Russia, Western Siberia, parts of Germany and Sweden and Northern Prairie lands of North America. There is no region of the Siberian type in the Southern Hemisphere.

These sections have extreme climate, the winter being low and severe, and summer short. The rainfall is never heavy and generally abundant in summer.

In the northern side of the region, coniferous forests of pine, spruce, firs, etc., are abundant and in the southern side trees are rare and vast grass-lands stretch in all directions. These grass-lands are called 'Prairie' in North America and 'steppe'* in Asia. Agriculture is the chief occupation in these areas. In

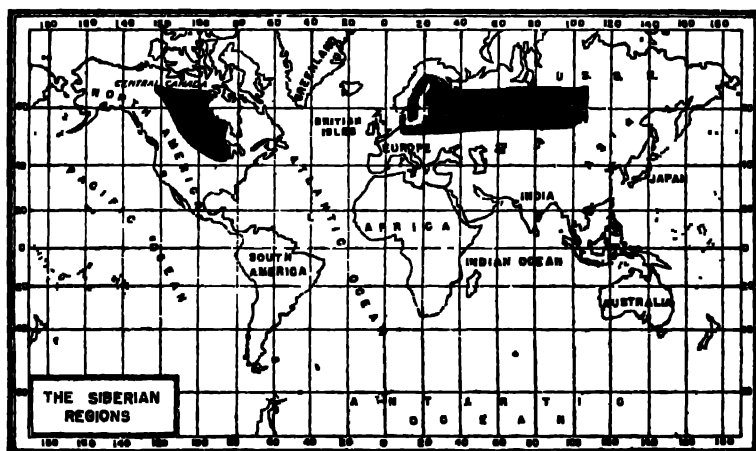


FIG No. 9 Distribution of interior lowlands of cool temperature regions. Note there is no region of Siberian type in the Southern Hemisphere.

the arid areas stock-raising is prominent. The Western Steppes of Eurasia are very productive but the Eastern Steppes are handicapped by their remoteness from the more advanced parts of Europe. Nevertheless, some progress has been made since the construction of the Trans-Siberian Railway.

* "Steppe" is a Russian word applied to all treeless districts except deserts.

3(d). Interior Highland or Altai Type

The important areas in this category are the Altai Range and adjacent lands of Asia, northern parts of the western mountain region of North America, British Columbia in Canada and the North-Western States of the U.S.A.

Climatic conditions vary in accordance with elevation. Generally the climate of these areas is very extreme. Forests are abundant and spruces, firs, douglas and larches are the prominent trees.

Although these highlands are rich in minerals, mining has not developed much, except in British Columbia. Agriculture is practised in the valleys with the help of irrigation. Hunting in Asia and lumbering in North America are the main occupations of the people.

4. Polar Regions

The Polar regions occupy the vast areas to the north of the Cool Temperate Zone. The regions may be conveniently divided into three parts: (a) Taiga or Forest region, (b) Tundra or plain, (c) Ice caps or Highlands.

POLAR TYPE. SPITSBERGEN. LAT. $28^{\circ}2'$ N. ; LONG. $14^{\circ}14'$ E
HEIGHT 37 Ft.

Month		Jan	Feb	Mar	Apl	May	June
T ^o F.	.	37	-24	-15	75	232	354
Rain (inches)	.	14	13	11	09	05	06
Month		July	Aug	Sept	Oct	Nov	Dec.
T ^o F.	..	417	401	322	216	109	61
Rain (inches)	..	06	09	10	12	10	15

(a) Immediately to the north of the Cool Temperate Zone stretches the forest region or Taiga. Winters are long and severe with short days and long nights, while summers are short and cool with very long days and short nights. Pines, firs, larch, and other coniferous trees are abundant. The timber resources of these forests have not been exploited because of transport and climatic difficulties. In these forests fur-bearing animals are numerous. The bulk of the world's valuable pelts

are collected from these regions. Agriculture, though not impossible, has not developed and the main occupation of the people is hunting and trapping. Population is consequently sparse.

Of domestic animals reindeer is the most important and is extensively reared in Alaska.

(b) The Tundras lie to the north of Taiga in Northern Eurasia and America within the Arctic circle. These lowlands have lower temperature than Taiga. With the exception of two months in the year lands are always covered with snow ; consequently agriculture is impossible. In summer, when the snow melts for a few months, plants like mosses, lichens and grasses grow rapidly. Reindeer, caribou and the musk ox are numerous in the "Arctic prairies" of Northern Canada and Alaska. Fish, seals, walruses and whales are also plentiful.

The Tundras are the most desolate deserts of the world, having a very sparse population. The density of population does not exceed anywhere one person per square mile.

The means of livelihood being few, people are mostly nomads. Food and clothing are mainly derived from the Tundra animals—meat supplies the food, and skin the clothing. The people are simple and primitive, and their life is hard ; so they have little time for intellectual pursuits. The Tundras are called the regions of privation. In winter, work is impossible. The only domestic animal is the dog, useful generally for transport purposes. Though the Tundra has little economic importance, it contains some minerals which remain still unexplored.

(c) The Polar Highlands,—N. Alaska, N. Greenland, Antarctica, Kamschatka and other adjacent lands have no vegetation because temperature is mostly below freezing point throughout the year and lands lie covered under a thick sheet of ice and snow over 1 to 3 thousand feet in depth. Only in Greenland peaks of mountains come out of the snow sheet. Icebergs originate from these lands.

QUESTIONS

1. What is meant by Mediterranean type of climate? Account for it and compare it with monsoonal type. Also give the chief products in each of them. —(Cal Inter 1925, 33, 35, 40, 42; B Com 1929, 33).

2 What are the monsoons? Describe briefly their effect on the economic conditions of India. —(Cal Inter 1931)

3. What do you understand by "a natural region"? Into how many natural regions can the world be divided? Name them and indicate their position in a map —(I. P. S 1931, 32).

4. Explain the following phenomena —

(i) In the Mediterranean region most of the rains fall in winter months

(ii) Civilised man is found mostly in the low land regions of the temperate zone —(I P. S 1932)

5 Describe and account for the position of the chief hot desert regions of the tropical zone. Mention any articles of commerce that have been obtained from them

6 "Probably there is no other single group of weather phenomena which is so far-reaching in its effects as the Indian Monsoon " Explain. —(Cal B Com 1925)

7. What do you understand by a 'monsoonal' type of climate? Carefully describe its characteristic products

—(Cal Inter 1944; I I B 1945).

CHAPTER III

AGRICULTURE

Agriculture is the art of raising plant life from the soil for the use of mankind. *The object of agriculture is to raise stronger and more fruitful crops and plants, and to help their growth by improving the soil and supplying water, when necessary, by irrigation works.* It is sometimes practised along with stock-raising, when it is termed mixed agriculture. It is the most important of all the industries on which climate and soil are the deciding factors.

Even when conditions are favourable, agriculture may not be worth adoption unless associated with certain other conditions. If a region is far from markets and is without any facilities for transport, it is not profitable to raise crops there unless it is for local consumption. Nearness to the market and transport facilities are essential to give agriculture a place in any system of national economy. By nearness to the market it must not be understood that the market should be always near at hand. A market may remain hundreds and thousands of miles away from the area of production. Argentina raises wheat for Europe: Bengal grows jute for Europe and America. Nearness to the market simply means that all the facilities are present to put agricultural products in certain markets at a reasonable price. Cost of labour is another important economic factor. Certain crops requiring a great amount of manual labour and attention cannot be profitably grown unless labour is cheap.

One special feature in connection with agricultural products is that the fertility of the soil diminishes after each cultivation. Consequently production decreases year after year. This tendency towards diminishing returns may be checked to a certain extent by the application of manures and the introduction of the rotation of crops. Secondly, the yield of the same crop per acre may vary in different countries because of difference in skill of the cultivators, application of scientific appliances of cultivation and other causes.

Cultivation of land may be done by intensive and extensive methods. Extensive cultivation is necessary where the population is small, manufactures undeveloped, trade inconsiderable and the demand for the products of the soil very limited. In intensive cultivation, capital and labour are so applied as to produce the largest possible yield. The soil is carefully drained, and fertilisers are used to render the area more productive. This system is only possible where there is a great demand for agricultural products and it exists chiefly in progressive states.

Methods of farming are not similar in every country. At present, three different methods of farming are widely used—(a) humid farming, (b) dry farming and (c) irrigation farming. Irrigation farming is practised in those parts of the hot lands where rainfall is seasonal. In India and China irrigation farming is the rule. Canals, tanks and wells have been constructed to supply water to the agricultural fields. Irrigation has converted millions of acres of deserts into smiling fields in many monsoon lands.

There are regions which are beyond the reach of irrigation facilities and which are frequently subject to drought. Neither canals nor tube-wells can supply water to them. They depend wholly on whatever little rain they receive. Here comes in the importance of dry farming. Dry farming methods were first discovered in the U. S. A., where there are extensive areas receiving less than 20 inches rainfall per annum and having poor irrigation facilities. The following are the prominent features of dry farming: (i) ploughing the land in deep soil (ii) terracing the land and division into compartments to allow rain-water to move only under controlled conditions, (iii) repeated harrowings before sowings, which conserve soil moisture and destroy weeds.

Humid farming means the production of crops in regions of moderate rainfall without the help of irrigation.

While studying agriculture one frequently comes across the term "plantation". Plantation ordinarily means tropical or sub-tropical agriculture which is engaged in producing "planted" trees or bushes. It is at present used in a narrow sense to denote those farms of the tropical lands where white men employ coloured labour. Thus tea grown by Europeans with the help of coloured labour in Bengal and Assam for foreign

markets is a *plantation crop* ; but when it is grown by Indians for the inland market, it is said to be a product of *garden*.

There is often maladjustment between demand and supply of many raw materials, for which it is necessary to regulate production of raw materials. The object and effect of regulation of any raw material is to raise the price to a fair level and then to stabilise its price when the fair level is attained.

Chief Agricultural Products

FOOD CROPS

- 1 *Cereals*.
Wheat, rice, maize, rye,
oats, millets and barley.
- 2 *Beverages and Drugs*.
Tea, Coffee, cocoa, tobacco
- 3 *Other Food Crops*.
Sugar, spices and fruits

INDUSTRIAL CROPS

- 1 *Fibre Crops*
Cotton, jute, hemp & flax.
- 2 *Miscellaneous*.
Rubber, oil seeds.

FOOD CROPS

Wheat .—Wheat is the staple food of the white race. The greatest portion of the wheat crop is manufactured into flour. Large quantities of starch are also made from it. The straw is used for fodder, for bedding in stables and also in the manufactures of straw board and the cheaper grades of wrapping paper.

Wheat plant belongs to the order of grasses and grows usually to a height of three feet. Several erect stems rise from the root of the plant, and the grains grow at the end of each such stem.

Generally speaking, wheat is a product of the temperate zone. Climatic conditions are very important for its production. In the early stages of growth it requires a fair amount of moisture with cool weather to be followed by warm and sunny weather without any rain. Just before the ripening of the grains, a little rain is helpful, but when it is ripening, clear and bright days are required. Most of the world's wheat regions have an annual precipitation not exceeding 30".

In general the best wheat soils of the world are heavy and dark in colour and of high fertility. Level land is highly

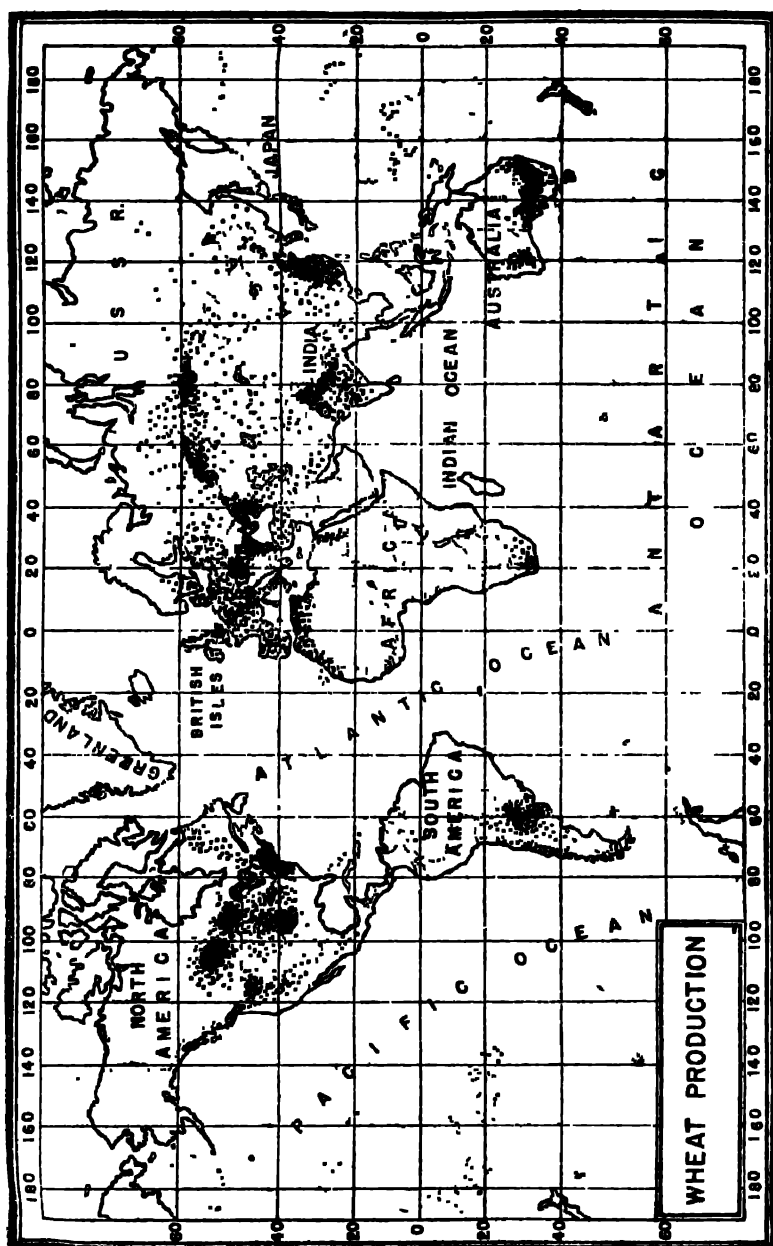


FIG. No 10 Distribution of wheat. Notice the wheat growing limits within 60° latitude.

favourable to extensive farming, as it permits the use of machinery necessary for modern wheat farming on a large scale.

Other factors are not less important than suitable climate and soil. Economic factors in wheat production have wrought great changes in a few decades. Introduction of farm machinery, adoption of scientific methods and improvement in transport have caused rapid expansion of wheat farming in the sparsely populated plains of Central North America, South America and Australia. Economic factors have not reached the same standard and do not work on the same basis in all countries.

YIELD OF WHEAT IN THE PRINCIPAL WHEAT GROWING
AREAS OF THE WORLD*,
(bushels per acre)

Country	Average (1935-39)	1947	Country	Average (1935-39)	1947
Argentina	14	14	Italy	22	17
Australia	13	17	Rumania	16	—
Canada	12	14	U S S.R.	12	11
U.S A.	13	19	China	15	16
France	23	16	India	11	9
Hungary	22	13			

Because of the geographical situation of the different countries wheat is harvested in every month of the year. This factor, along with the remarkable development of transportation facilities, has resulted in an equalisation of prices in the wheat markets of the world.

TIME OF SOWING AND HARVESTING OF WHEAT IN
DIFFERENT COUNTRIES OF THE WORLD

Country	No. of harvests.	Sowing Season.	Harvesting Season.
Argentina	.. 1	April-August	November—January
Australia	.. 1	April-June	October-January
Canada	.. 2	(a) August-September (b) April-May	(a) July-August (b) August-September
U.S S.R.	.. 2	(a) August-November (b) March-May	(a) July-September (b) August-September
U.S.A.	.. 2	(a) Sept.-October. (b) April-May	(a) May-July (b) August-September
Indian Union	.. 1	October-December	March-May
Pakistan	.. 1	October-December	March-May

* Wheat situation, Dec 1947 U S. Department of agricult

The following is the relative position of the different countries in respect of wheat production.

PRODUCTION OF WHEAT IN DIFFERENT COUNTRIES OF THE WORLD

(million bushels)

Country	Average		Country	Average.	
	1935-39	1947-48		1935-39	1947-48
Argentina	.. 222	175	U.S.S.R	1371	875
Australia	.. 170	250	India	382	298
Canada	.. 312	341	Hungary	88	40
U.S.A.	.. 759	1407	Rumania	141	—
France	.. 288	150	China	715	905
Italy	.. 279	205			

The total production of wheat in 1947-48 was near about 5775 million bushels

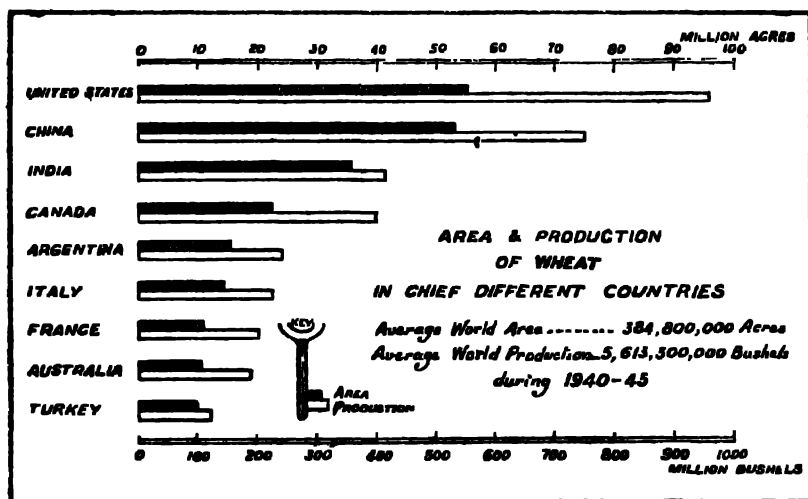


FIG No. 11

The wheat-producing regions of the world are divided into two groups: those producing only for domestic consumption, and those producing for domestic consumption as well as export.

The most densely populated countries of the world like U. S. S. R., China, U. S. A and India are the greatest wheat-producers. Home consumption being great, these countries

cannot export wheat in large quantities. Canada, Australia and Argentina, which are all sparsely populated states, handled normally before 1939 as much as 82 per cent. of the international wheat trade. It is interesting to note that these three countries produce only 12 per cent. of the world's wheat.

During the post-war period, however, a change has taken place in the wheat trade. There is now a great demand for American wheat in European markets. Bulgaria, Rumania, Hungary and U.S.S.R. are in normal times wheat surplus areas and supply wheat to European markets. But due to war devastations, these countries have not yet been able to reach the pre-war level of production. The volume of wheat export from Australia and Argentina has also declined. As a result, the U.S.A. is now the leading wheat-exporting country in the world.

EXPORTS OF WHEAT

(million bushels)

Country	Average 1934-38	Average 1939-44	1946
Argentina	123	110	53
Australia	102	67	55
Canada	175	236	223
U. S. A.	23	10	291

In 1947, the U. S. A. accounted for 51 per cent of the total exports of wheat of the world, while the others' shares were Canada 23 per cent., Argentina 11 per cent., Australia 13 per cent. and U.S.S.R. 3 per cent.

Great Britain is the greatest importer of wheat, consuming as she does more than 40 per cent. of the wheat offered to the world market.

U. S. A. is the greatest wheat-producing country and the raising of this crop is carried on in Kansas, North Dakota, Nebraska, Oklahoma, Illinois, Washington, Missouri, Minnesota, Ohio and some other states. In 1947 the U. S. A. produced a little above 1400 million bushels of wheat against 1,000 million in 1942. North Dakota and Kansas supply more than 250 million bushels of wheat each. Between North Dakota and Minnesota, extending into Canada, is the Red River Valley,

which is such a prolific wheat-producing country that it is known as the 'Bread basket of the world'. The great wheat centres are Minneapolis, Duluth, Chicago and Buffalo. The Pacific States were once the important producers of wheat. In recent years, the production has decreased because fruit-farming has proved more profitable in these areas. Although in recent years the U.S.A. has been exporting wheat in considerable quantities, normally, the country does not export wheat, as it has to support a population thirteen times more than Canada.

Soviet Russia is the largest wheat-producing country in the world. Cultivation is no longer confined to the "Black-earth" region of the Ukraine. The cultivation of wheat has extended to Northern Russia, West Siberia, East Siberia and Orenburg region. The rapid extension of wheat lands is due to a more intensive system of work, the mechanisation of agriculture, and to more healthy conditions of work on collective farms. Kherson and Odessa on the Black Sea handle the bulk of the export trade in wheat. The other important wheat centres are Moscow, Gorki and Orenburg.

Canada has become one of the great wheat-producing countries of the world. It raised in 1943 about 300 million bushels of wheat as compared to 600 million bushels in 1942. This great decline in the output was due to the greater attention being paid to other industries for war efforts. Her wheat lands are Manitoba, Saskatchewan, Alberta and Ontario. Winnipeg and Port Arthur are great centres of wheat production in the Dominion. Decreasing fertility of land in Manitoba and Saskatchewan, and the opening of railways in the west are factors responsible for the shifting of wheat cultivation to further west, i.e., Alberta. Canadian wheat is exported through New York (40 p.c.), Vancouver (25 p.c.), Montreal (15 p.c.), Halifax, St. John and Portland.

In India wheat is cultivated in the East Punjab, U. P., C. P. and Berar, Central India States, Bombay and Bihar. Pakistan grows wheat in Sind, West Punjab and North-West Frontier Province in an area of about 9 million acres of land. India and Pakistan produce about one-tenth of the world's total crop and occupies the fourth place. Indian wheat, though produced almost wholly for domestic consumption, is frequently a factor in the export market. When the price of wheat is high in the

international market or when there is a surplus in India, a portion of it may be exported and in such cases India may influence the world price of wheat.

The position of the British Empire in respect of wheat supply is very satisfactory, although it supplies only 16 per cent of the world output of wheat. The Empire is a net exporter of wheat although two decades ago, the British Empire was not self-sufficient.

Although the population of the world is growing and the consumption is increasing, the improved methods of production and the utilization of available areas in Australia, Siberia, China and in some parts of South America have increased the supply of wheat more rapidly than the demand.

The world Wheat Conference met in March, 1949 at Washington (U.S.A.), and drew up an agreement to assure the importing nations a dependable supply, and to give each exporting country 'a fair share' of the world market. It is a multilateral four-year contract among 36 importing nations and 5 exporting countries.

Rye .—It ranks next to wheat in importance. It originated in Siberia and is raised further north than any other grain crop.

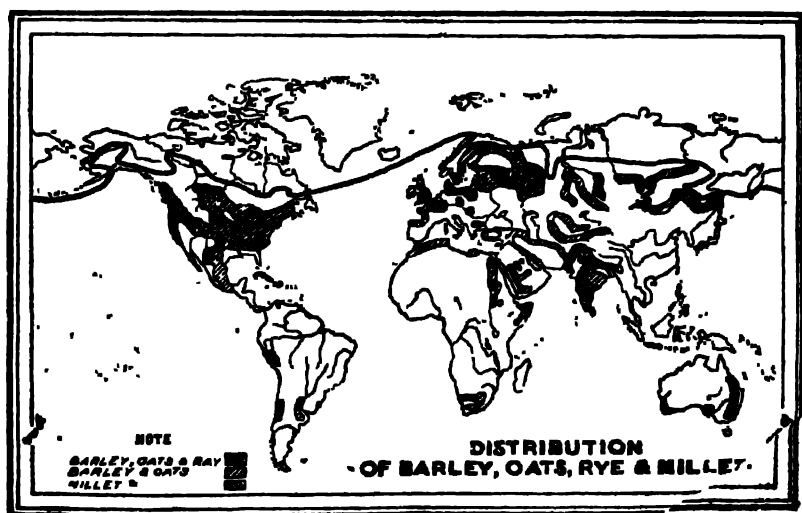


FIG. No. 12 Note the concentration of barley production in U.S.A. and U.S.S.R.

It has been cultivated in Asia and Europe from time immemorial and for centuries it has been one of the most important food plants. It is also used for the preparation of Gin. The straw is used for making horse-collars, mattresses, baskets and straw hats.

Rye is distinctly a crop of cool and moist climates. It thrives in fertile as well as in poor lands. The principal rye-producing countries are the U. S. S. R., Germany, Poland, Rumania, Holland, Scandinavia, Hungary, British Isles, U. S. A., Argentina and Canada.

In Russia nearly 50 per cent. of the total crop of the world is raised. Germany raises about one-sixth of the world production. Rye is essentially a crop grown for home consumption, and the international trade in the commodity is very small. U. S. A., Canada and Argentina export a considerable portion of their limited crops and there is some movement from the greater producers of Scandinavia and other European countries.

Barley :—It is one of the cereal grains. It is a broad grain and is also a common ration for horses, cattle and pigs. Barley is used for thickening soups and also for the manufacture of beer and whisky.

In general appearance and manner of growth, barley resembles wheat. Among its many varieties some thrive best in the warm temperate lands and some are cultivated farther north than any other cereal crop. Barley grows best in the Mediterranean climate.

The world's barley crop is about one-third of wheat. Europe raises approximately one-half and Russia alone about one-third of the world's supply.

PRODUCTION OF BARLEY IN 1940

(In millions of metric tons)

U. S. S. R.	..	82	India	..	21
U. S. A. ..	..	67	Japan	..	18
China	..	64	Poland	..	15
Germany	..	43	France	..	13
Turkey	..	23	Czechoslovakia	..	13
Canada	..	22	Iran	..	11

The world production of barley in 1940 was a little above 450 million quintals.

U. S. A. and Russia head the list in the production of barley. Methods of cultivation are not the same in every pro-

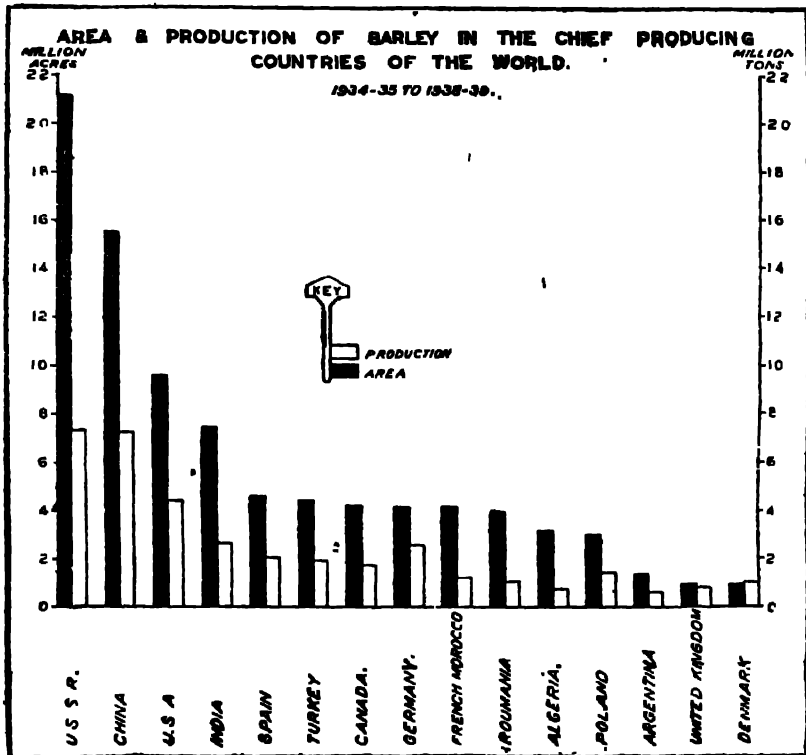


FIG. No 13 Area and production of barley.

ducing country. The average yields of barley per acre are 44 bushels in Belgium, 24 in Canada, 21 in U.S.S.R. and 14 in the U.S.A. Barley is grown in every province of Canada, but Manitoba and Ontario are the leaders.

Barley is exported from Rumania, U. S. A., Russia, Argentina, Poland, Canada, Australia and India. The principal importing countries are U. K., Germany, Holland, Belgium and Switzerland. The principal features of the British Empire trade in barley are exports from Canada and imports into U. K.

Oats :—It is the largest cereal crop of the world, but the grain is usually grown for home consumption and is less important in commerce than wheat. Though it is chiefly used as food for cattle and horses, it is also used for human consumption.

Oats thrive well in a cool, moist climate and are, therefore, grown in the northern parts of Europe and North America. The annual production is approximately equal to that of wheat.

AVERAGE ANNUAL PRODUCTION OF OATS

(In millions of metric tons)

U. S. A.	..	..	18.1	France	..	..	4.8
U. S. S. R.	..	..	11.2	Poland	..	..	2.4
Germany	..	..	6.6	U. K.	..	..	2.3
Canada	..	..	6.0	World production	..	..	64.4

U. S. A. and Russia produce about half the world's oats. The international trade in oats is extremely small as the chief producers (with the exception of Argentina and Chile) grow it mainly for home consumption. Nevertheless, in recent years Germany and Russia and in some years the U.S.A., Canada and the Danubian countries have placed considerable quantities in the foreign markets. The chief importing countries are U.K., Italy, Switzerland, Belgium, Holland, France and Denmark.

Rice :—It forms the principal food of one-half of the population of the world. A kind of distilled liquor in India and a number of intoxicating drinks in China and Japan are also made from it. Sandals, hats and various other articles are made from the straw; the husk is used for filling mattresses and in packing goods. It is also mixed with cement for building *sound-proof* walls.

Rice is grown on a variety of soils, but a free loam allowing root development with a heavy clay sub-soil to retain water is the most productive. It thrives in regions of high temperature and heavy rainfall. During the growing season, temperature should not be less than 75 degrees. It is seldom raised where the annual rainfall is less than 45 inches. It demands swamp conditions and during a considerable part of its growth it must

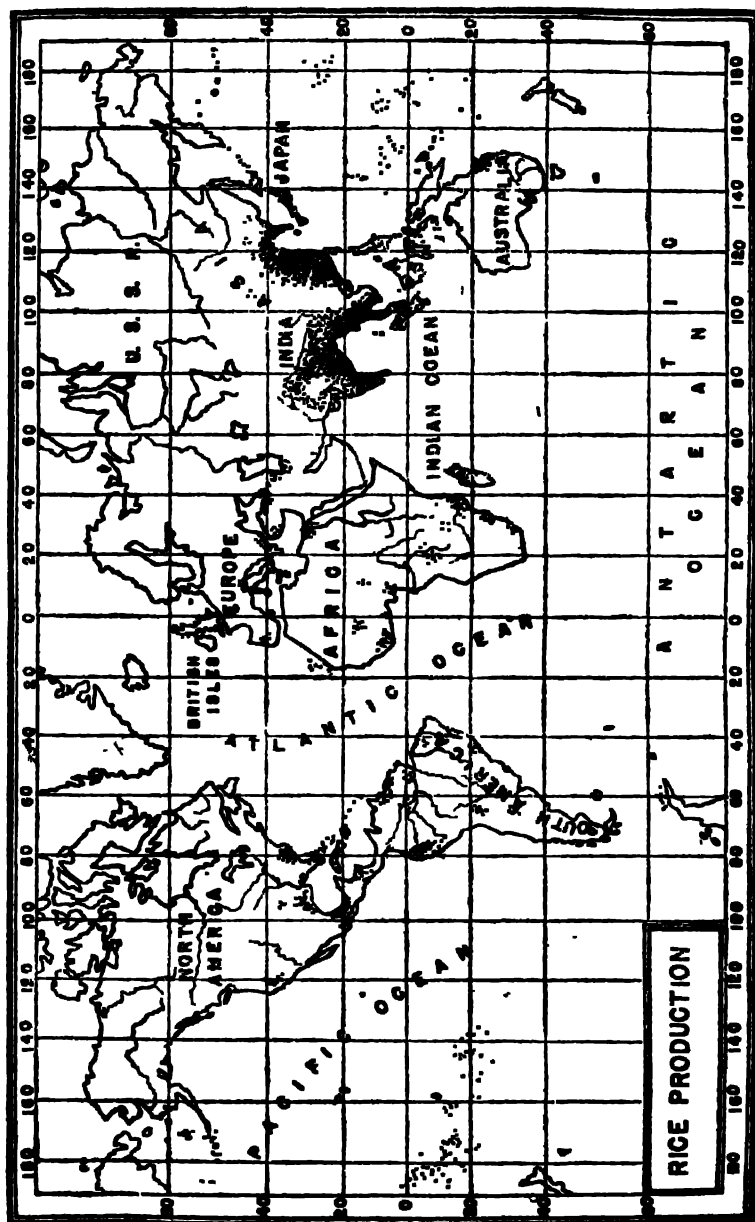


FIG. No. 14. Distribution of rice production. Note the concentration of cultivation in the South-east Asia.

be flooded. Level lands are, therefore, essential for rice cultivation, especially of the alluvial soils of the river valleys and deltas.

Rice may be grouped into two general classes—"hill rice" and "swamp rice". 'Hill rice' requires much less water than 'swamp rice', being frequently grown without irrigation where rainfall is abundant. 'Swamp rice' requires frequent flooding, and must be raised on level ground suitable for irrigation. The yield of 'hill rice' per acre is normally less than one-half of that of 'swamp rice' and so it is much less cultivated.

The upland or 'hill rice' is raised largely by the primitive peoples of the Malaya Peninsula and near-by islands, of tropical America and Equatorial Africa. The great monsoon regions of southern and eastern Asia are favourable to the raising of low-land or 'swamp rice'.

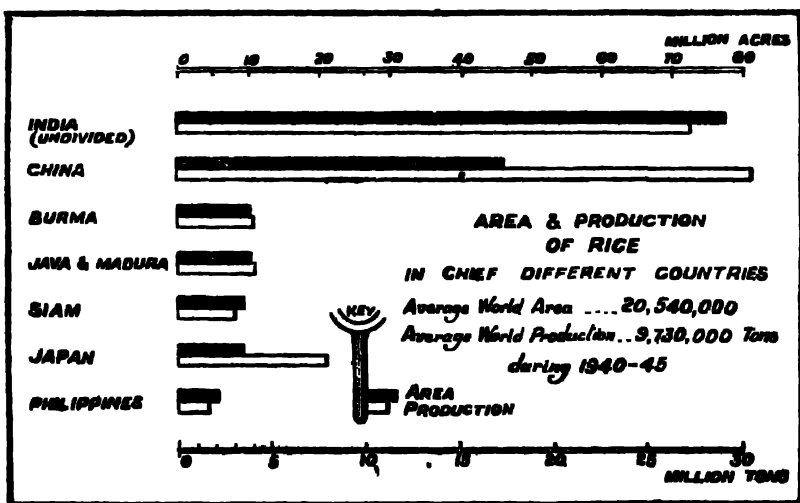


FIG. No. 15

Rice is chiefly produced in India, China, Burma, Malaya, Ceylon, Indonesia, Indo-China, Siam, Korea, Formosa, Japan and Philippines. There is also a little production in Egypt, Italy, Spain, U.S.A. and Brazil. Owing to physical limitations Europe lags far behind Asia in rice production. Only in the warm, moist lowlands of the Mediterranean are conditions suitable for the cultivation of rice, and even there irrigation is

necessary. The share of Italy in the world's production of rice is insignificant ; but she maintains a very high yield per acre. Rice in Italy is grown in the valleys of the northern provinces of Piedmont, Lombardy, Venetia, Emilia and Tuscany.

India and China are the world's greatest producers of rice. The output is generally high in all the Asian monsoon areas including Japan, Indo-China, the Dutch East Indies, Siam, Korea and Eastern Pakistan.

PRODUCTION OF RICE IN DIFFERENT COUNTRIES

(million tons)

Area	Average.		Area	Average	
	1935-39	1946		1935-39	1946
Indian Union	.. 19	18	Java	.. 4	3
China	.. 35	30	Indo-China	.. 5	1
Japan	.. 8	8	Korea	.. 3	2
Burma	.. 5	3	Pakistan	.. 7	8
Siam	.. 3	2			

THE YIELD OF RICE PER ACRE VARIES FROM AREAS TO AREAS

(lbs. per acre)

Area	1936-37	1946-47	Area	1936-37	1946-47
India	.. 862	771	Siam	.. 949	756
China	.. 1655	1549	Italy	.. 2940	2431
Japan	.. 2454	2030	U. S. A.	.. 1485	1334
Burma	.. 918	624	Egypt	.. 2030	2040

The enormous home consumption of rice in India, China, Japan, Eastern Pakistan, Java and the Philippines prevents these countries from having a surplus of rice for export. The surplus to the world market comes from the less densely populated sections of Burma, Siam and Indo-China.

EXPORTS OF RICE FROM THE PRINCIPAL EXPORTING AREAS

(000 tons)

Area	Average		Area	Average	
	(1935-39)	1946		(1935-39)	1946
Burma	.. 3014	420	India	.. 261	—
Indo-China	.. 1360	134	Brazil	.. 53	152
Siam	.. 1332	482	Egypt	.. 105	179
Korea	.. 1109	—	U. S. A.	.. 90	295
Formosa	.. 469	—			

Due to devastation caused by the world war II, many of the Asiatic countries are not yet in a position to export rice in any appreciable quantity. Political disturbances in Burma and Indo-China have slowed down the restoration of abandoned land to cultivation. Generally they have retarded recovery in production and export. Conditions for an expansion of production are comparatively favourable in Siam. •

The principal importers of rice are India, Japan, Malaya, Ceylon, France, China, Indonesia and Cuba.

-The rice problem today is two-fold. *The short term problem* is to speed up the output of rice immediately so as to save the rice-consuming population from the persistent danger of privations and eliminate the gap between supply and demand for rice. The world production of rough rice (paddy) in 1948-49 was estimated at 145 million tons, but it was still 2.9 million tons below the pre-war average. The gap is really a wide one if we take into consideration the increase of population in the meantime in many rice-consuming areas. Population in the rice-eating areas increased by nearly 100,000,000 in the decade 1939-48. These increased consumption requirements are 10 per cent over the pre-war average. *The long-term problem* is to secure a balance between a swiftly rising population curve and a more or less stationary output level.

The International Rice Conference has been set up in Asia consisting of rice producing and consuming countries of the world to deal with problems concerning rice. The organisation has undertaken the work of control of prices and stocks and the task of international distribution.

Maize :—Maize is a native crop of America, and is one of the most valuable food plants of the world. It is largely employed in distilleries and in the manufacture of starch and glucose. Its peculiarly high fattening properties and its prolific yield have caused its large employment in the rearing and fattening of live-stock. Maize is also an important food grain for man.

Maize requires higher temperature and much more summer rain than wheat. The soil should be rich and well-drained. Much sunshine is beneficial and frost is harmful. Very little maize is grown in areas having a rainfall of less than 8 inches

and most of the maize is grown in regions with an annual rainfall of at least 20 inches.

U. S. A. raises four-fifths of the corn produced in the world. The other important producers are Argentina, Russia, Rumania, Brazil, Yugoslavia, India, Mexico and Italy.

Both in production and export, the U. S. A. is easily the leading country in the world. It is mainly grown as an animal food in Missouri, Indiana, Nebraska and Ohio. The entire meat-packing industry of the country is concentrated in these areas with Chicago, St. Louis, Indianapolis and Cincinnati as the chief centres. The second largest producer of maize is Argentina. South Africa is also raising maize extensively. In India the production of maize for food is quite considerable.

MAIZE PRODUCTION IN 1939-40.

(In millions of quintals)

U. S. A	.. 665	Italy	.. 29
Argentina	. 106	U. S. S. R.	.. 27
China	.. 61	Hungary	.. 23
Rumania	. 60	India	.. 21
Brazil	.. 60	Dutch East Indies	20
Yugoslavia	. 40	Mexico	.. 17
Manchuria	. 30	Egypt	. 15

The world production of maize was about 1,230 million quintals.

The chief exporting countries are the U. S. A., Argentina, Rumania, Yugoslavia and South Africa. The United Kingdom takes considerable quantities of maize from the U. S. A., Argentina and Rumania.

Millet .—It is a very important cereal crop of the monsoon region and is grown for fodder or for food.

Millet flourishes best in those hot lands where rainfall is scanty and unreliable. It can be grown without irrigation even in areas which are fairly dry. The important millet-producing countries are India, China, Japan, U. S. A., and the Sudan. There is very little trade in millet, nearly all of it being grown for local consumption. In India millet constitutes an important food crop for Madras, Bombay and Hyderabad.

Tea :—It is the name given to the dried leaves of an ever-green tree. Tea has become so universal in use among the civilised peoples that it is now looked upon more or less as a necessity. The greatest tea drinkers are the Chinese, British, Russians, Dutch, Australians and South Americans.

Tea requires a deep fertile soil, which must be exceptionally well drained, so that there can never be stagnant water in the soil. It is, therefore, generally grown on hill sides, although it flourishes in well-drained valleys also. High temperature is absolutely necessary in summer

An economic factor that restricts tea-growing is the need for a large supply of cheap labour. All the picking of the leaves is done by hand and it involves a great deal of manual work. It is, therefore, grown in those sub-tropical lands which have abundant cheap labour, and in those lands it is a productive crop.

The important tea-producing countries are China, India, Ceylon, Java and Japan. In Natal and Fiji some tea is grown. The chief exporting countries are India, Ceylon, China, Japan and Formosa.

CHIEF TEA-PRODUCING COUNTRIES

IN METRIC QUINTALS (000 OMITTED) IN 1940

(one metric quintal equals 220·46 lb)

China	..	.. 4,000 (1936)	Dutch East Indies	819
India	..	.. 1,748	Japan	.. 575 (1939)
Ceylon	..	.. 1,120		

Although China has the largest acreage under tea, there is hardly any exportable surplus on account of heavy demand in the domestic market. India is now the leading exporter of tea in the world and contributes about 50 per cent of the world's total. Most of the tea acreage of India is in the north-eastern part of the country—in Northern Bengal and in Assam. In fact, about four-fifths of the tea acreage of India is in this north-eastern area, the remaining acreage being in the southern part of the Peninsula, in the Nilgiri Hills. One special feature of the tea plantation of India is that the majority of tea plantations is in the hands of the Europeans. The large con-

sumers of Indian tea are the United Kingdom, Russia, France, U.S.A., Canada and Australia. The Eastern Pakistan has a few tea plantations in Sylhet and Chittagong.

AVERAGE ANNUAL EXPORTS OF TEA

(In thousands of metric tons)

India	..	..	..	166	Dutch East Indies	..	77
Ceylon	..	..	..	115	Japan	..	12
China	..	..	..	77	Formosa	..	6

London is the largest tea-distributing centre in the world and Great Britain consumes more than half of the world's imports. Russia consumes about one-quarter of the tea exported from Asia. Attempts are being made in Russia to produce tea. The total Russian production of tea is very insignificant, amounting only to about several thousand pounds, whereas the annual consumption is equal to about 3 million pounds.

After 1929 there was a great over-production in the tea-growing areas and as a result there was a heavy fall in prices, many concerns collapsed and the industry faced precarious conditions. An international scheme was, therefore, worked out in 1932 for regulating the volume of export and cultivation of tea from 1933 (April 1) to 1938 (for five years). A second restriction scheme was put into operation on the same principles in 1938.

One of the main drawbacks of the scheme of 1932 was that all the producing countries did not join in the agreement. India, Ceylon and the East Indies were parties to the scheme and they were tied as to their exportable output. In 1932 the non-participating countries exported one-sixth of the world's total tea trade, but in 1937 they handled more than one-fourth of the world's tea export.

A new International Tea Agreement has been made recently for a period of two years from April 1948. India, Pakistan, Ceylon and Netherlands are the members of the agreement.

Compared to demand, there is at present under-production of tea. During the war years, tea cultivation was disturbed in East Indies, Japan and Formosa. It will not be possible for these countries to reach the pre-war level of production before 1951. There is consequently great demand for Indian tea. The

market outlook, however, in U.S.A. and Canada is not encouraging as coffee consumption has very much increased in these two countries.

Cocoa :—The cocoa tree is a native of South America. It has been transplanted to other parts of the wet equatorial region and has become a profitable plantation crop.

The cocoa tree requires constantly high temperature and an abundance of moisture. "Much moisture and deep fertile soil are essential to a good yield." A prolonged and excessive drought is very harmful and too much rain is also a disadvantage. The plant requires shade from sun and shelter from wind. Regions of equatorial climate are best suited to cocoa plantation. Gold Coast, Nigeria, Brazil, British West Indies and Ceylon are the chief producers. Thus the distribution of cocoa is limited to within 20 degrees of the equator.

CHIEF COCOA-PRODUCING COUNTRIES IN 1939

AVERAGE PRODUCTION IN METRIC QUINTALS (000 OMITTED)

(1 metric quintal equals 1968 cwt)

Gold Coast ..	2,747	French Cameroons	237
Brazil	1,100	Trinidad ..	201
Nigeria	695	Ecuador	197
French West Africa	518	Spanish Guiana	149
Dominican Republic	283	Venezuela	142

The cocoa plantations are mostly managed by the Europeans, though in West Africa the natives have developed their own plantations.

Gold Coast provides almost the whole of the world's supply. "Having equal facilities with other producing countries as regards climate and soil, it has outstripped its competitors by its more skilful exploitation of the land, by experienced administration on the part of white men and by keeping cocoa as the only important money crop. Other factors are that the Gold Coast lies on an old established shipping route, and that the development of railways and roads has made communication between the plantations and the ports very much superior to those existing in the older producing countries such as Ecuador."

At present the U. S. A. leads the world's consumers of cocoa. Forty per cent. of the world's annual crop goes to the

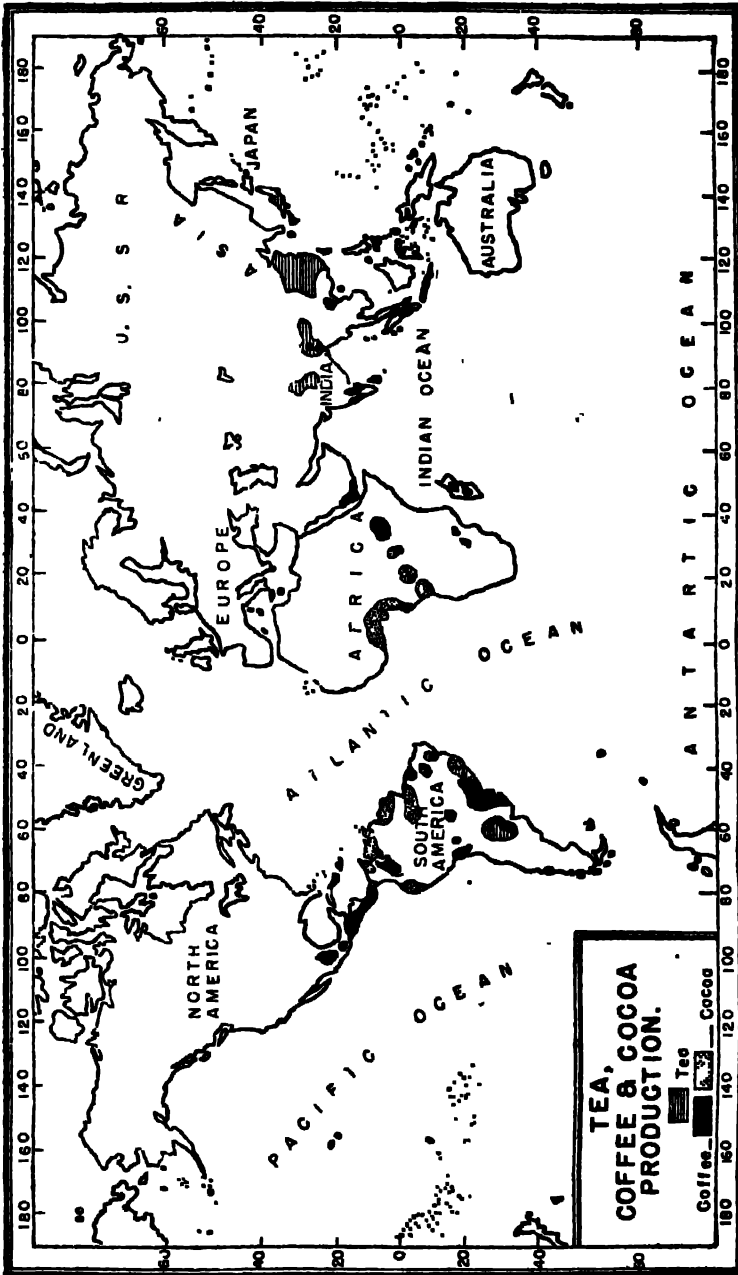


FIG. No. 16 Distribution of tea, coffee and cocoa production Note the great cocoa belt in equatorial Africa.

U. S. A., the countries of North-West Europe consuming most of the remainder. Spain is the only European country where cocoa is regarded as a necessity. Switzerland and Holland import large quantities for making chocolate.

AVERAGE ANNUAL EXPORTS AND IMPORTS OF COCOA

(000 metric tons)

<i>Exporters</i>			<i>Importers</i>		
Gold Coast	..	240	U. S. A.	..	220
Brazil	..	100	Germany	.	80
Nigeria	..	70	U. K.	..	70
Dominica	..	20	France	..	50
Trinidad	.	30	Holland	..	40
Venezuela	..	20			
Ecuador	..	15			

Coffee —It is grown in many countries and has become a regular commodity of consumption in several parts of the world. Coffee plant requires a rich well-drained soil, a warm climate and a moderate supply of moisture ; so plantations are generally limited to the tropics. The plant, when young, must be sheltered from strong sunshine and with this end in view banana and other shady trees are planted on coffee estates. As the soil must be rich and well-drained, the plant grows usually on hills and highlands where the streams have rapid falls to give the necessary drainage. Three to five years are required for the plant to mature after which it bears fruit for some thirty years. The pulp of the fruit is removed to obtain cherry-stones inside. The inner kernels of these cherry-stones are the coffee.

Coffee is a tropical product and is grown almost exclusively for export. One economic factor on which large output depends in most lands is the supply of abundant cheap labour, because a large amount of hand work has to be performed in preparing the product for the market.

The important coffee-producing countries are Brazil, West Indies, Mexico, Central America, Venezuela, Columbia, Andean Highlands, India (South), Ceylon, Dutch East Indies and Arabia.

In Yemen, on the southern side of Arabia, the best coffee in the world is grown.* But though the soil and climatic conditions are excellent there, inadequate irrigation, poor roads, high taxes and bad government have kept the yield per acre low. Consequently the export is small.

Brazil alone grows more than half of the world's coffee and the prosperity of the country depends on the coffee trade.† The state of Sao Paulo, with its rich volcanic soils, is particularly suited to coffee-growing. The other areas are Rio de Janeiro, Espirito, and Minas Gerais.

In India the principal coffee regions are Mysore, Madras, Coorg, Cochin, Travancore and Bombay. In some of the growing areas coffee has been replaced by tea. Indian coffee is exported to the United Kingdom and France.

CHIEF COFFEE-PRODUCING COUNTRIES

IN METRIC QUINTALS (000 OMITTED) IN 1939-40

(1 metric quintal equals 1968 cwt.)

Brazil	..	..	12,500	British East Africa	383
Columbia	.	..	2,670	Haiti	250
N. E. Indies	..	..	1,071	Cuba	320
Mexico	.	.	500	Costa Rica	240
Venezuela	..	..	650	Madagascar	300
Salvador	.	.	540	Belgian Congo	230
Guatemala	.		550	World production—22 million.	

Tobacco:—It is exceedingly important in international trade. Tobacco is prepared from the leaves of plants which are native to tropical America. But although it is a tropical plant, it has a very wide range, being grown in all parts of the world. It is raised in the equatorial region and also as far as Canada, Scotland and Northern Poland.

* Yemen coffee is erroneously called "Mocha Coffee". There is no "mocha coffee". Mocha is a port on the Red Sea through which the coffee of Yemen is exported.

† The danger of depending on one crop for the economic welfare of the people of a country is best seen from the Brazilian coffee industry. In 1897 there was a great over-production of coffee in Brazil and in consequence the prices fell heavily, bringing miseries in its wake to innumerable Brazilian coffee growers. In its effort to restore prices the Brazilian Government resorted to valorization, which consisted in buying up large stocks of coffee, holding them until the prices improved and then releasing them gradually. Since then valorization measures have become a regular part of the Brazilian coffee-marketing programme.

Tobacco plant thrives in light soil that is rich in lime, humus and potash. It is sensitive to frost. As regards economic factors, a considerable amount of cheap labour is necessary for the cultivation and preparation of tobacco.

The leading producers of tobacco are the U. S. A., India, China, Russia and Japan ; the Philippines, East Indies, Brazil, Pakistan and most of the countries of Central and Western Europe also account for large quantities. The leading exporters are the U. S. A., Sumatra, Cuba, Brazil, Bulgaria and Turkey. Western Europe is the chief importing area, specially U. K., Germany and France

WORLD TOBACCO OUTPUT

	Acreage (In 000's)		Production (million lbs.)	
	Average		Average	
	1935-39	1947	1935-39	1947
<i>North America</i>	1960	2210	1710	2470
of which				
Canada ..	69	125	77	116
U. S. A .	1647	1845	1460	2108
<i>Europe</i> ..	680	800	675	720
of which				
Bulgaria .	94	114	76	106
France .	44	72	73	115
Italy .	81	143	95	143
U. S. S R ..	490	—	525	—
<i>Asia</i> .	3750	3670	3250	3150
of which				
China .	1228	1476	1255	1430
<i>South America</i> ..	355	480	305	400
of which				
Brazil .	237	—	203	265
<i>Africa</i> ..	245	385	125	203
of which				
South Rhodesia ..	51	124	26	79
South Africa .	41	—	20	51
<i>Oceania</i> .	12	9	7	7
World total ..	7492	8092	6597	7341

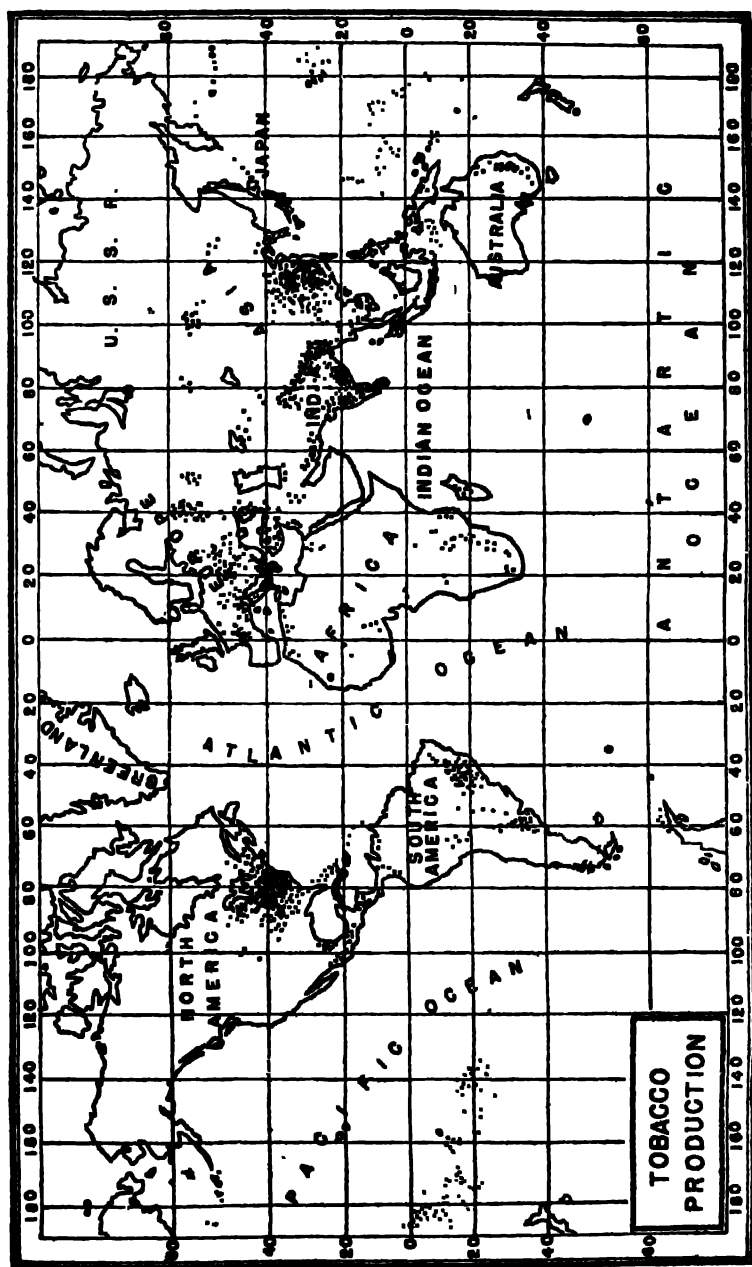


FIG. No. 17. Distribution of tobacco production. Note the wide climatic range over which tobacco is cultivated.

U.S.A. is a great producer of tobacco. In 1943 the U.S.A. raised 1,372 million lbs. of tobacco. The chief tobacco-growing States are North Carolina (547 million lbs.), Kentucky, Virginia, Tennessee, South Carolina, Georgia, Pennsylvania, Wisconsin and Ohio. Coloured labour is employed in the plantations because it is very cheap. The important tobacco centres are Louisville, Richmond, Petersburg and Winston-Salem.

Cuba tobacco is famous throughout the world for its fine flavour, being much prized for cigar. Havana is the great cigar-manufacturing centre of the island.

A considerable quantity of tobacco is grown in Java, Sumatra and the Dutch East Indies, where the plantations are mostly managed by Europeans with Chinese labour. In recent years splendid progress has been made in the Dutch East Indies, which has become second only to the U.S.A. as a tobacco-exporter.

Tobacco is one of the most valuable crops grown in India, which produces about as much tobacco as the U.S.A. Pakistan produces about one-third of Indian production of tobacco. Brazil is the third tobacco-exporter in the world. Bahia is the principal port of Brazil which does considerable trade in tobacco. In Europe tobacco is grown extensively in Hungary, Bulgaria, Yugoslavia and Greece.

In Great Britain supplies of tobacco are drawn from the U.S.A., India, Sumatra and the Philippines.

Sugar :—It is probably the most widely used of all food products. Nearly all sugar is obtained from the juice of two plants, the sugar-cane which is essentially tropical or sub-tropical, and the sugar-beet which is temperate.

Sugar-cane belongs to the tropical and sub-tropical regions and it requires for its successful cultivation a high temperature and ample rainfall. The soil must be well drained and should have salt and lime in it; so it grows best along the sea-coast. The plant requires little attention during its growth but an abundance of cheap labour is necessary in harvesting the crop and preparing the material for export.

The important sugar-cane-producing countries are India, Cuba, East Indies, Brazil, Hawaii, Mauritius, the Philippine

Islands, Dominica, British Guiana, Formosa, Porto Rico and Australia. The chief importers are the U. S. A. and the United Kingdom. Although India is one of the greatest producers of cane-sugar, it is also the third greatest importer.

PRODUCTION OF SUGAR-CANE IN 1940-41.

(In million quintals)

India	..	..	35	Porto Rico	..	..	8
Cuba	..	..	27	Australia	..	..	7
Java	..	..	16	Argentina	..	..	5
Brazil	..	..	12	Peru	..	..	4
Philippines	..	..	9	Mauritius	..	..	3
Hawaii	..	..	8	U. S. A.	..	..	3
Formosa	..	..	8				

The world production of cane-sugar in 1940-41 was about 180 million quintals.

Before 1939, the world problem of sugar was that of over-production. The International sugar council was established in 1937 to overcome the evils of over-production. Almost all the chief sugar-producing countries (accounting for 90 per cent. of world sugar) joined the council in order to establish orderly relationship between supply and demand and to secure a fair return for efficient sugar growers and producers. Today the supply is short of demand because the major sugar areas like the Philippines, Java, Formosa and Ukraine have been devastated by the world war II. The world output of sugar in 1947-48 was 33 million short tons of 2000 lb each

Sugar constitutes the chief source of wealth to Cuba. Cuba supplies one-eighth of the world's sugar, both cane and beet. This means the development of enormous plantations and an immense investment of capital, binding up the prosperity and well-being of the people to a single crop. During the world war II, the production of sugar tremendously increased in Cuba. The production rose from 2.7 million tons in 1941 to 6.4 million tons in 1947. The international sugar position at present is bound up with the situation in Cuba.

India ranks first in sugar production. Although the crop is grown throughout Northern India, the chief area of produc-

tion embraces the middle and the upper regions of the Gangetic plain. The production of sugar in Pakistan is 25,000 tons.

Before the occupation of Java by Japan the sugar industry had an important place in the national economy of that island. High profits arising out of the industry induced the growers to cultivate sugar extensively. Its cultivation largely replaced rice. Then the Government took strict measures to see that not more than a third of the land in any given area was devoted to sugar-production.

Beet sugar forms about one-third of the total sugar produced in the world. Sugar beet is a temperate crop and requires well-drained fertile loamy soil and is such an exhausting crop that heavy manuring is constantly necessary. Sugar beet seems to thrive best in a region with a continental type of climate, provided the rainfall is not too small.

The chief producers are Germany, U.S.S.R., France, U.S.A., Czechoslovakia and Poland. The important exporters are Germany, Czechoslovakia and Poland. The United States is the only country where sugar-cane and sugar-beet are produced within the same political frontiers, and there most of the cane produced is not used for making sugar. Also the two regions of production in the United States are small and remote from one another.

PRODUCTION OF SUGAR-BEET

(In million quintals)

U. S. S. R.	..	..	24	Italy	.	.	4
Germany	.	..	21	Poland	..	..	4
France	..	..	9	U. S. A.	..	.	15
Czechoslovakia	.	..	5	World Production			105
U. K.	..	..	5				

Soviet Russia is the leading sugar-beet-producing country in the world. It raises about one-fourth of the world's total supply of beet sugar. Trans-Caucasia, West Siberia and south and central European Russia are the cultivated areas. Till 1914 Germany was the greatest producer of sugar-beet.

Not many years ago beet sugar controlled the world market ; but, to-day, it is the privilege of cane-sugar to supply

more than two-thirds of the total requirement of sugar. Sugar-cane has certain advantages over sugar-beet inasmuch as its cultivation is easier and the yield per acre is richer. Moreover, it is grown in tropical and sub-tropical areas where labour is very cheap. But there are certain advantages on the side of beet production also. Sugar-beets are grown where the population is dense, capital is easily obtained and good machinery can easily be used. Furthermore, the refuse materials and by-products have great commercial value.

At present the production of sugar-beet is continued for economic and political reasons. Many countries of the temperate zone (like Germany and France) consider it unsafe to depend on the tropical countries for the supply of sugar. Besides, the development of beet-sugar industry provides employment for many at home. They have, therefore, encouraged the growth of sugar-beet by subsidies or bounties and protective tariffs. In normal time, Germany, Russia and France are at least self-sufficient in sugar, but not so Great Britain, U.S.A., Italy and Japan.

In the British Empire more than a third and less than half of the world's total crop of cane-sugar is produced. One-half of the British total is produced and consumed in India alone. In spite of such huge production the Empire has not yet become entirely independent of foreign supplies of sugar. But with further development in Queensland, India, Mauritius and British East Indies, the Empire will become self-sufficient and may also be able to export a considerable quantity of sugar to other countries.

Fruit .—Fruit, an important article of commerce, is grown all over the world. Formerly the demand for fruit was confined to the outlying areas as it could not stand distance and time, and, therefore, it was not an important item of foreign trade. But the invention of cold storage methods and the introduction of fast transportation system have greatly helped the movement of fruits from place to place. For commercial purposes, fruits of tropical and temperate regions are important.

Tropical fruits :—Banana, mango, date, guava, pine-apple and melon are some of the chief fruits of the tropics.

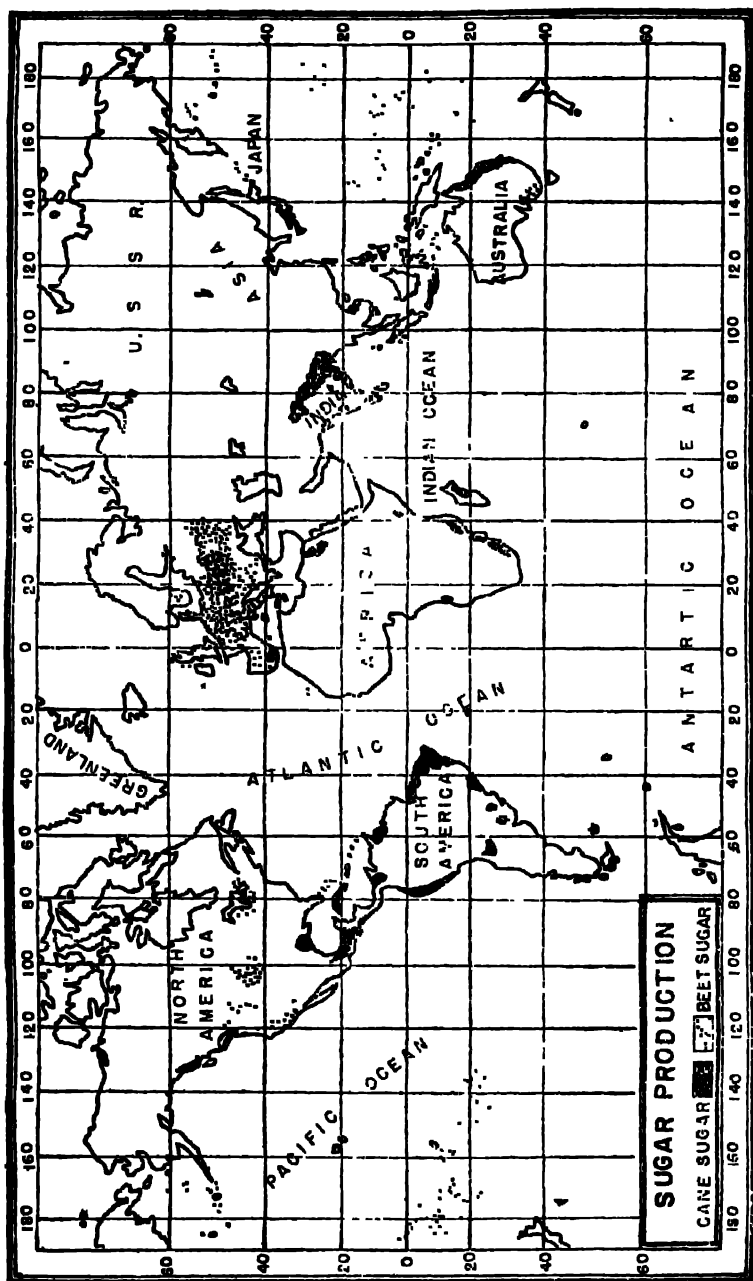


FIG. No. 18. Sugar production Note the sugar beet areas in the temperate region : Sugar-cane, a tropical product.

Of all tropical fruits banana is the most important. It is not only one of the staple articles of food in many equatorial regions where it is grown but it is in great demand in the temperate regions also. Banana tree requires warm climate and abundant rain. Consequently, it is grown in the West Indies, Central America, north of South America, Jamaica, Costa Rica, Columbia, Honduras and Guatemala, from where it is mainly exported to the U.S.A. and Europe.

Pine-apple is cultivated in the Str. Settlements, West Indies, Florida and Siam. As a plant it requires high summer temperature with no frost. The rich exporting countries are Porto Rico, Siam and Str. Settlements. Mango is a very delicious fruit of the tropics but up till now its export is small. Attempts are being made in India to open markets in the U. K. for Indian mango. Date is essentially a product of the desert, it grows extensively in North Africa, Iran and North-West India. It is an important article of commerce, and it is in great demand in Europe and the U. S. A. Another widely used tropical fruit is coconut, but the general demand is more for copra than for the fruit.

Temperate fruits:—Temperate fruits may be divided into two groups (1) Warm temperate fruits, (2) Cool temperate fruits.

The coast-lands of the Mediterranean fall within the warm temperate zone. The climate is distinguished by warm summers, mild winters and winter rain. In these areas olive, figs, grapes, apricots, oranges, lemons and almonds grow abundantly. These fruits are known as citrus fruits.

Olive is important as a fruit and also for its oil. It is a native of Asia Minor and is strictly limited to the Mediterranean climatic regions. Plenty of cheap labour is necessary for picking olives by hand. The important olive-producing regions are Spain, Italy, Greece, Portugal and Tunis. Olive oil is used for the manufacture of soaps. It is also employed for cooking, lighting and medicine preparations. The olive-exporting countries are Italy, Greece, Tunis and Algeria.

For successful cultivation, grapes require well-drained land with a sunny warm season and, therefore, the Mediterranean regions are the best. The chief grape-producing countries are

France, Italy, Spain, Southern Russia, Algeria, Greece, Western Asia, California, parts of Argentina, Cape of Good Hope, Chile and South Australia. Grapes are marketed in three forms, *e.g.*, fresh for table consumption, dried as currants, and juice as wine.

The apple is mostly found in the U. S. A., Canada, North Africa, South Australia, Chile and England. But the U. S. A. is the leading country both in production and export. The orange is another important fruit of the Mediterranean region though it can be grown both in the tropics and sub-tropics. Spain is the leading producer of orange, closely followed by California and Italy. Lemons are grown in all the continents ; but their cultivation is the greatest in the Mediterranean region.

Other warm temperate fruits, such as apricots, almonds, figs, etc., are in considerable demand outside the growing areas.

The Cool Temperate Fruits :—In the cool temperate zone apples, pears, cherries and plums are the noted fruits. Apples are grown best in Canada, Tasmania, New Zealand, Australia and Nova Scotia. British Isles also grow apple of high quality, but the quantity is too small for foreign trade. British Columbia, California and Tasmania have a large production of pears. Plums are found in large quantities in Siberia.

For the export of temperate fruits the U.S.A., Italy, Turkey, Spain, Greece, Iran and Algeria are prominent. Recently Rumania and Tasmania are also exporting fruits in considerable quantity.

Spices .—From very early times there has been trading in spices, which are important not only for improving the palatability of food, but also for the preparation of flavouring oils. Spices are mostly the products of the tropics. Generally high temperature and heavy rainfall are required for the cultivation of most of the varieties.

Of innumerable spices of the tropics, pepper, ginger, cloves and cinnamon are important for foreign trade.

Pepper is the berry of a vine-like climbing plant which is grown extensively in Java, Sumatra, Malaya, Borneo, Siam and the Malabar Coast of India. It is put in the market in two

varieties—black pepper and white pepper. It is called black pepper when the whole berry is ground, and white pepper when it is powdered after the removal of the outer skin. The United Kingdom is the leading pepper-importing country in the world from where it is re-exported to other countries.

Chilli is the product of an entirely different plant which originated in tropical America. It is a small pod which is dried in the sun before putting in the market. It is extensively grown in the tropics of Asia, Africa and America.

Ginger is the underground stem of a red-dyed plant indigenous to South Asia and is put in the market in fresh as well as sun-dried conditions. The large scale cultivation of ginger is confined to South America, West Africa, China, India and West Indies.

Cloves are dried, unopened flower buds of "*eugenia caryophyllata*" and are used not only in cooking confectionery and liquors but also as a source of oil which is largely used in perfumery. Zanzibar and Pemba (on the eastern coast of Africa) contribute four-fifths of the world's supply of cloves. The other countries producing cloves are Penang and India. In India it is cultivated in the Madras Presidency.

Cinnamon is the dried bark of a small evergreen tree, native of Ceylon. The cultivation has spread to Java, Brazil, West Indies, East Indies and China. Apart from its use as a spice, it is also important for its oil which has medicinal properties. Southern India produces considerable quantities of cinnamon.

The other minor spices are nutmegs, mace, vanilla, all-spice and cardamoms.

Though the tropics are noted for the production of many kinds of spices, a number of plants furnish spices in the temperate regions as well. Among these are mustard, soya, caraway seeds, coriander seeds and aniseed.

Mustard is obtained from the ground seeds of mustard plants which grow in many parts of Europe. Coriander seed is in demand for its use as a flavouring element in confectionery. Soya sauce is in much demand in Japan and Manchuria to improve tasteless food like rice.

Sago :—It is a very nutritious and easily digestible food. The Sago-palm requires heavy rain and high temperature, and is grown in swampy places. It grows to a height of nearly thirty feet, and has enormous long leaves. The East Indies and the Malaya Peninsula contain extensive Sago plantations.

Arrowroot :—It is obtained from the tubers of a plant which grows from two to three feet in height. The plant is cultivated in the West Indies, the East Indies, Bengal and other tropical countries.

THE DEGREE OF SELF-SUFFICIENCY IN FOODSTUFFS OF CERTAIN IMPORTANT COUNTRIES

Although the world's food production has kept fairly steady, there is food shortage in many countries due to reduced production and increased population. In the Far Eastern countries, the production has gone down during the post-war period by more than 5 million metric tons. Because of the increase in domestic consumption in the exporting countries, grain exports have also fallen. At the same time, in 1948-49, the world production of main foods was equal or better than the pre-war average. Compared with the average for 1938-39, the crop position today is as follows.

Wheat	..	105	Barley	100
Corn		125	Rice	98
Oats	..	100	Potatoes	105

The present shortage is therefore due to the increased and increasing world population.

Let us now examine the degree of self-sufficiency in foodstuffs of the various countries of the world. As a rule, the highly industrialised countries are not self-sufficient, and they depend for foodstuffs on agricultural countries where the population is generally thin. The following figures relate to the period ending 1938.

<i>Country.</i>	<i>Per cent.</i>	<i>Country.</i>	<i>Per cent.</i>
Great Britain ..	25	Brazil ..	96
Norway ..	43	Spain ..	99
Switzerland ..	47	India ..	100
Belgium ..	51	China ..	100
Holland ..	67	U. S. S. R. ..	101
Finland ..	78	Denmark ..	103
Greece ..	80	Poland ..	105
Germany ..	83	Bulgaria ..	109
France ..	83	Rumania ..	110
Sweden ..	91	Hungary ..	121
U S A ..	91	New Zealand ..	123
Chile ..	93	Canada ..	192
Portugal ..	94	Australia ..	214
Italy ..	95	Argentina ..	264
Japan ..	95		

*

INDUSTRIAL CROPS

Cotton :—It provides the civilised world with a large portion of its clothing. There is no other plant that comes so close to the civilised man and none which we use so much every day.

It has a considerable climatic range ; but it grows well in warm, moist and even climates where the summer is long and where there is salt in the soil. Sea breeze is beneficial for the quality of the fibre. So the ideal situation for a cotton plantation is on lowlands near the sea or preferably on islands in tropical or semi-tropical latitudes.

U. S. A. is by far the greatest producer of raw cotton. Next in order are India, China and U. S. S. R. These four countries together produce the bulk of the world's crop. The other important producing countries are Brazil, the Sudan, Iran, Mexico, Peru, West Africa, Uganda and Japan.

WORLD PRODUCTION OF COTTON FOR YEARS BEGINNING 1ST AUGUST*

(In 1,000 bales of 478 lbs. net, except in running bales for United States)

Country	1938-39	1945-46	1946-47	1947-48 ¹
World (total)	29,474	21,071	21,517	24,947
North America (total)	11,964	9,337	9,073	12,028
United States	11,617	8,852	8,574	11,500
Mexico	307	450	462	485
Other	40	35	37	43
Asia and Oceania (total)	8,274	5,904	5,900	5,862
China	2,301	1,820	1,925	2,150
India	5,082	3,530	3,484	3,200
Other	891	554	491	512
Europe (total)	3,959	1,773	2,357	2,731
Soviet Union	3,800	1,700	2,240	2,600
Other	159	73	117	131
South America	2,697	2,071	1,964	2,089
Argentina	261	297	289	350
Brazil	1,989	1,350	1,300	1,300
Peru	378	329	276	325
Other	69	95	99	114
Africa (total)	2,580	1,986	2,223	2,237
Belgian Congo	172	174	190	185
Egypt	1,692	1,059	1,252	1,288
Anglo-Egyptian Sudan	263	187	220	226
Uganda	254	191	188	142
Other	199	375	373	396

Of the several varieties cultivated for market, four stand out prominent. *the Sea Island, the Egyptian, the Peruvian, the Upland*. The first named has the largest, finest and silkiest fibres. The plant can be grown only upon lowlands and it takes its name from the fact it was first raised on islands off the coasts of South Carolina, Florida and Georgia (in the U.S.A.). It is sometimes known as long staple cotton

* Preliminary.

N.B.—In the above tables, India includes the Indian Union and Pakistan

Source . Commerce, Bombay, 4th Sept., 1948.

Egyptian cotton, also called medium staple cotton, is specially suited to the manufacture of goods requiring a smooth finish and is less expensive than sea island cotton. Peruvian cotton possesses a rough, strong fibre, similar to that of wool. It is well adapted to mixing with wool and is used in the manu-

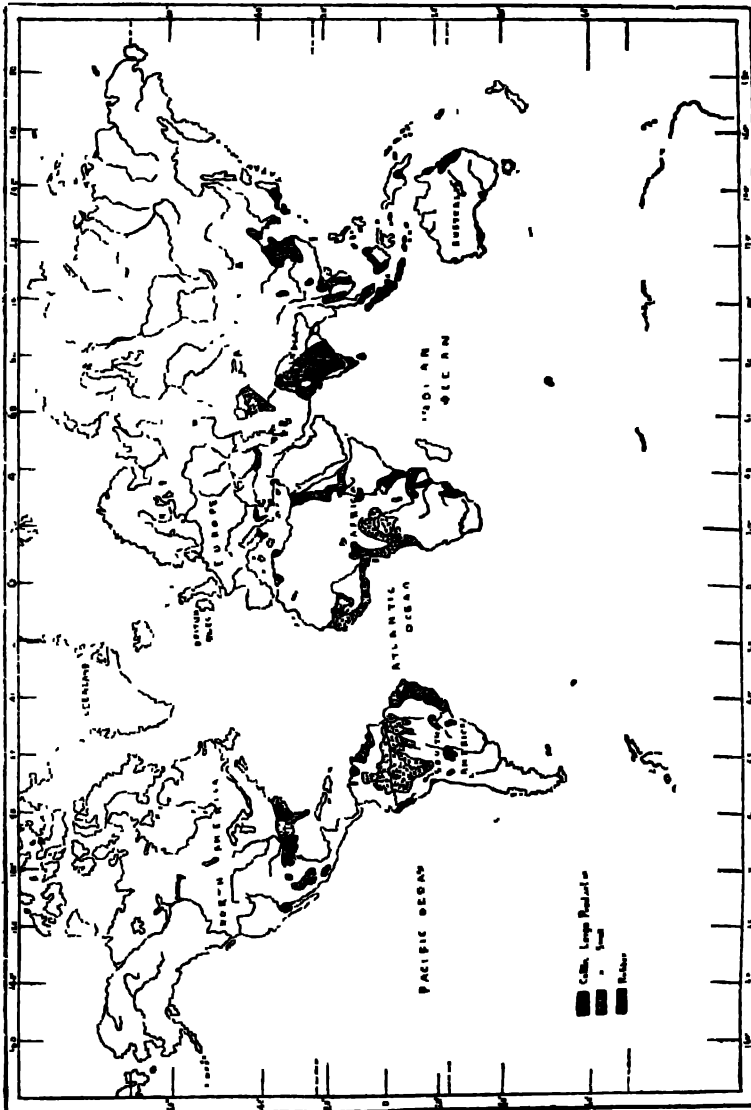


FIG. No. 19. The dotted areas in the Amazon basin, Belgian Congo, the East Indies and S. India indicate rubber plantations. Cotton production is indicated by lined and shaded areas.

facture of underwear and hosiery. Upland cotton is the most widely used and the most abundant of all varieties.

Recently there has been a tendency in almost every cotton-growing country in the world to increase the output of cotton of better varieties.

U.S.A grows nearly 50 per cent of the world's commercial crop. The cotton area stretches in one big belt from North Carolina to Texas. The chief cotton-producing states of the U. S. A. are Texas, Mississippi, Arkansas, Alabama, Georgia, North and South Carolina, Louisiana and Tennessee. U. S. A. cotton consists of two varieties—the Sea Island and the Upland. Much of the produce goes to the U. K. The principal cotton ports are Galveston, New Orleans and Savannah.

Indian cotton is mainly produced in the fertile volcanic black-lands of the Deccan. It is coarse and of short staple. Pakistan raises cotton mostly of American variety. Of late, both in India and Pakistan, the proportion of crop larger than $\frac{7}{8}$ " has increased substantially, although the bulk of the crop is still shorter than one inch. Egyptian cotton is grown in the Nile Valley. The chief port from which it is exported outside is Alexandria. Brazilian cotton is cultivated on the coastal lowlands and is exported from Bahia and Pernambuco. With the exception of India, Uganda is the largest cotton-growing country within the British Empire. The prosperity of Uganda has been closely bound up with the cotton crop; the extension of roads and railways and the expansion of towns are due to the rapid progress made in this industry during the last twenty years. At present Uganda supplies about 2 p.c. of the world's total output of cotton.

The yield of cotton per acre is not the same in the different countries.

YIELD OF COTTON PER ACRE

(1938)

Countries	Yield	Countries	Yield
Egypt	531	Soviet Union	322
Peru ..	508	U. S. A	264
Anglo-Egyptian Sudan	277	Brazil	154
Argentina ..	151	Uganda	84
		India ..	84

The difference in average yield is due to the diversity of conditions under which cotton is grown.

Cotton is a very important article in international trade. The principal importers of cotton are the U. K., Japan, Germany, France, Italy and China. Before 1942 Japan was the largest importer of cotton in the world.

IMPORTS OF COTTON BY THE PRINCIPAL IMPORTED COUNTRIES

Country	1938-39 (1,000 bales of 478 lb. each)	1946-47 (1,000 bales of 478 lb. each)
Japan	2757	741
U. K.	2198 ¹	1818
Germany	1178	550
France	1077	903
Italy	574	1130
China	774	853
India	352	546
World total	12,012	10,363

U. S. A., India and¹ Egypt are the three principal cotton exporting countries of the world. U. S. A. sends annually more than 15 million metric tons of cotton. Pakistan will also become in near future an important supplier of raw cotton.

WORLD EXPORTS OF COTTON

	(In 000 bales)				
	1938-39	1946-47		1938-39	1946-47
U.S.A	3325	2300	Egypt	1764	1600
India	2685	1300			
Brazil	1609	1000	World total	11,727	8752

In the matter of cotton the British Empire is not at present self-supporting, although it raises 34 p.c. of the world's total. The demand for cotton in the British Empire is far in excess of the actual needs of the people of the Empire. This is because the United Kingdom manufactures cotton goods largely for foreign markets. Cotton grown in the British Empire mostly comes from India and Uganda, and it is generally inferior in

quality. Therefore, it finds little favour with Lancashire which has to import this raw material from the U. S. A. and Egypt. About three-quarters of the cotton used in Lancashire consists of the finer varieties from the U. S. A.

Measures are being taken to make the British Empire self-supporting, and the British Empire Cotton Growing Association is actively engaged in this direction. Northern Nigeria, Nyasaland and the British East African Colonies of Tanganyika and Kenya can grow huge quantities of cotton. Already the Sudan has made much progress in cotton cultivation. A great dam at Sennar on the Blue Nile has been constructed to irrigate the Gezira district which raises cotton in increasing amount and of improving quality. Recently Sind and the Punjab in Pakistan have begun to raise American cotton with improved seeds and better irrigation facilities.

The spread of civilization and the rise in the standard of comforts are increasing the demand for cotton and, therefore, there is need for increasing the areas of cotton production. Fortunately there are immense possibilities of increasing such areas. Outside the British Empire, the West Indies can grow more long staple cotton of Sea Island type than they do now. Before 1941 Russia, with fairly cheap labour and vast land, was becoming more and more important as a cotton exporter and relieving the pressure on the ordinary American upland. Her chief difficulties were defective transport and deficient rainfall. Formerly cotton cultivation in Russia was confined to Trans-Caucasia and Turkistan. In recent times it has been extended to the Crimea, Black Sea coast, the coastal region of the Sea of Azov, and the Ukraine. It is interesting to note that while the production was 215 thousands of tons in 1929, it increased to 407 thousands of tons in 1935. There are also great possibilities of cotton cultivation in Mexico, Korea and Manchuria.

Jute :—Next to cotton, jute is the most important tropical fibre crop. It is mainly used for the manufacture of cordage, carpet, coarse gunny cloth and sacking. "The demand for jute in the world's market is based upon the fact that no cheaper fibre is procurable for bagging agricultural produce." Although many fibres are now available for commercial use, jute still continues to hold the field as a fibre which can be produced

at an exceptionally low cost and is consequently suitable for the production of a wider range of articles.

Jute is a tropical plant. It requires rich alluvial soil, high temperature and heavy rainfall. The plant generally grows to a height of 5 to 10 ft. Although jute is a tropical plant, its cultivation is confined almost exclusively to the Lower Gangetic plain of India and Eastern Pakistan. About 74 p.c. of jute raised in India and Pakistan, comes from East Bengal. The successful cultivation of the crop in this area is due to a combination of factors such as good soil, abundance of rain during the season, suitable water for rotting purposes and cheap labour. The quality of the fibre and the yield per acre depend in a large measure upon the preparation of the soil. The East Bengal jute is strong and hard and is suitable for the manufacture of high grade hessians which account for about 48 p.c. of jute manufactures. Ceylon, Formosa, China and Malaya also grow a little jute. Jute may also be grown in Egypt, Iran, Siam, Indo-China, Brazil, Japan, Mexico and Paraguay.

Indian and Pakistan jute is mainly exported to the United Kingdom, Germany, the U. S. A. and France. Canada, Japan, Italy and Argentina also import large quantities of jute.

Jute manufactures may be divided into four classes.

- (a) gunny bags, used for packing rice, wheat, oil-seeds, etc ,
- (b) gunny cloth or hessians ; (c) coarse carpets and rugs ;
- (d) cordage.

In India the jute manufacturing industry is highly localised in a small area on the banks of the Hooghly, near Calcutta. This area is ideally situated for the centralization of jute industry because of the proximity to the raw material, plentiful supply of cheap labour, moist climate, nearness to the port of Calcutta and navigability of the river.

Outside India, the most important jute manufacturing centre is Dundee in Scotland. Calcutta and Dundee supply the world's requirements for manufactured jute and there is a keen competition between these two centres. It was the privilege of Dundee to control the world market for manufactured jute up till 1908 : since then Calcutta has been enjoying the leadership of this industry.

Jute cultivation has largely displaced rice in many tracts of East Bengal and given rise to the danger of depending too much

on one crop. Although East Bengal produces 74 p.c. of jute of undivided India, the jute mills are all located in Indian Union. Pakistan cannot establish jute mills immediately in view of world shortage of capital goods and paucity of capital in Pakistan. Export is of primary importance to both India and Pakistan inasmuch as Pakistan cannot consume the jute she grows, nor can India the manufactured jute she produces.'

Jute bags are being displaced by the use of elevators and bulk shipment in transit in many countries. Many substitutes have also been discovered in several countries to compete with jute in the world market. Russian hemp has found considerable room in the markets of Indian jute. Paper bags are now-a-days used in the cement trade of the U.S.A. to the exclusion of jute bags. In the U.S.A., Germany, and other continental countries textile yarn made from woodpulp was offering a certain amount of competition to the jute textiles inside electric cables. At present attempts to grow jute are being made everywhere. Experiments are being conducted by Italy to cultivate real jute in Abyssinia. A jute-like fibre called Rosella is extensively grown in Java. It is reported that Java will be self-supporting so far as sugar bags are concerned in future. The South Africans are at present experimenting with the fibre of a plant called *wild stokroos* which may prove suitable for the manufacture of wheat bags. This plant is now cultivated in East Transvaal.

During the war years of 1939-45, when the jute trade was interrupted owing to hostilities, cloth, paper bags and a few substitute fibres become very popular as packing materials and captured a considerable part of the markets held by jute. Since 1946, consumers have again shown a tendency to prefer jute. What really assisted these substitutes to invade the jute market during the war years was not their superior quality but only the non-availability of adequate quantities of Indian jute. As regards paper bags, the advance made in recent years was mainly the result of changes in packing requirements. The producing countries like the U. S. A. and Canada only are in a position to use paper bags with advantage. Compared with paper bags and cloth, jute has good competitive strength owing to its lower price, greater durability and re-use capacity.

Cultivation and production of a few jute-like fibres may be possible, but, it is doubtful if any other vegetable fibre can be grown as a commercial crop to compete with jute. Nowhere else such natural favourable conditions of production and cheap labour are available as in India and Pakistan

Hemp :—It is a plant grown both for fibre and for seed. The fibre is manufactured into cordage, sacking, sail cloth, twine and ropes. The seed is used principally for poultry food and the oil is an important constituent of certain paints and varnishes.

Hemp has a wide range of cultivation, for it is grown in tropical and temperate parts of the world. The plants after flowering are removed from the fields, dried in the sun and soaked in water for two weeks. The fibre is then separated from the wood by constant beating. Russia, Italy, China, Hungary, India and the U.S.A. are the leading producers.

In Europe, Russia is the principal producer. In other parts the cultivation of hemp is small. Italy produces the best quality hemp though it ranks far below Russian hemp in quantity. In the U. S. A., the important hemp-growing areas are Ohio, Wisconsin and Kentucky. Philippine Islands produce fine quality hemp known as Manila hemp, which is mainly used for ropes and cordage.

Mexico, Tanganyika and Kenya raise Sisal hemp which is noted for its hard fibre. Sisal hemp is mainly used for making binder-twine.

India is a great producer of hemp and it is grown in Madras, Bombay, C. P. and U. P. Indian hemp is exported to the U. K., Belgium, Italy, France, Germany and Denmark.

Flax .—It is cultivated both for fibre and for seed. The seed is of importance for the extraction of oil which is used in the manufacture of paints and varnishes, while the fibre is used for twine and canvas as well as for various types of linen cloth.

The two products—fibres and seed—rarely come from the same plant. In tropical and sub-tropical areas flax is grown for seed, while in cool temperate areas it is raised for fibre. The cultivation of flax is largely confined to those lands where there is a dense population with a low standard of living, for

heavy manual labour is required in pulling up the plant by the roots, removing the seeds with comb and wetting the straw to cause soft parts to rot, when fibre will be separated from them. Consequently it is raised in India, Russia, Italy, Ireland and Argentina.

The crop is raised for fibre in Western Russia, Poland, Holland, France, Ireland and Belgium. In India, U. S. A. and Argentina it is cultivated for seed. The important exporting countries are Russia, Belgium, Argentina and India.

Silk :—Silk is a useful material which is complementary to cotton and cotton textiles. Apart from its use as apparel, the silk is used in electric insulation and surgical equipment and is indispensable for typewriting ribbon. It is also used for parachutes, tapes and cordite cloth. Although silk is a fibre of animal origin, its production depends on the cultivation of certain trees of which the mulberry tree is the most important. The silk-worms thrive on the leaves of these trees. The silk-worms or caterpillars spin cocoons from which silk is collected. The principal silk-producing countries are China, Japan and Italy. Small quantities are also produced in India, France, Spain and Asia Minor. China is the greatest silk-producing country and exports 18 per cent of the world's silk supply. It is a household industry in China. Before the Second World War Japan was the greatest silk-exporting country. Nearly 90 per cent of Europe's silk comes from the Po Valley in Italy.

PRODUCTION OF RAW-SILK

(In 1000 metric tons in 1940)

Japan	45,000	U.S.S R	1,700
China	3,768		
Italy	3,500	India	52

The most important markets for raw silk in the world are France and the U. S. A.

Rayon has acquired in a brief span of years world-wide importance. *Rayon* is the generic term for manufactured textile fibre or yarn produced chemically from cellulose or with a cellulose base. "The cellulose in cotton waste or wood is

reduced to liquid pulp by a chemical process and then forced through capillary tubes which change it into a fibre." It is possible to spin and weave this fibre without changing the existing equipment of silk mills. Rayon is in great demand among the manufacturers, for it may be used with cotton, silk, linen and wool. Although natural silk is lighter in weight, softer, finer, more lustrous and elastic than rayon, the price of the former has been affected to a great extent by the large scale use of the latter. The rayon-producing countries in order of importance are the U.S.A, Japan, Italy, Germany, U.K., France and Holland.

WORLD OUTPUT OF RAYON

(In millions of kilos)

	1935	1937		1935	1937
Japan	102	175	Germany	68	107
U. S. A.	115	145	U. K.	56	68
Italy	74	120	World total	493	750

The world output of rayon has been steadily rising in the post-war period. For the first half-year of 1948 the production advanced to 251,000 tons against 20,900 tons in the corresponding half of 1947. Despite this increase, rayon supplies are still running below demand.

Rubber —It has become the foremost plantation crop of the Wet Equatorial region and the most valuable plantation crop in the world. Fifty years ago it was not an important item in commerce or industry; to-day it is a major commodity.

Rubber is obtained either from plantation or from wild rubber trees. The rubber tree is found in areas having a heavy rainfall and a rich, deep, loamy soil which is well-drained. It is, therefore, grown in the equatorial areas like the Congo basin, the Amazon basin and the East Indies.

Plantation rubber is now an important industry and the output is increasing with tremendous strides. As late as 1910 the output of the wild rubber was more than 10 times as large

as that of plantation rubber. To-day plantation rubber comprises nearly 90 per cent of the world's rubber.

Wild rubber mainly comes from Brazil, Columbia, Venezuela and Belgian Congo. In Brazil, it grows in the Acre Territory, Amazon and Para. Due to war of 1939-45 the collection of rubber in Brazil has been considerably increased and in 1943 about 35,000 tons were raised. The gathering of wild rubber in Venezuela was resumed in 1942 after the fall of the Malaya States. Belgian Congo raised 1,800 metric tons of rubber in 1942.

There are many difficulties in collecting wild rubber. The rubber gatherer must laboriously open long paths from tree to tree and must trudge for miles each day through mosquito-infested swamps to gather a few pounds of latex. Moreover, the wild rubber areas like the Amazon and Congo basins are hundreds or thousands of miles inland and some of the districts are remote from the trade routes. On the other hand, almost all the important rubber plantations are conveniently situated near the sea coasts of Asiatic tropics and along one of the world's greatest sea routes. Plantation rubber has made it possible (i) to reduce the labour of gathering latex, (ii) to take advantage of the cheap and abundant labour supply of more densely populated parts of the tropics, and (iii) to locate the industry near good and convenient trade routes.

Most of the rubber plantations are found on or near the coast of the East Indies and of Malaya Peninsula and 90 per cent. of the world's total output comes from this region. The other important areas are Ceylon, India, Brazil and Congo.

WORLD PRODUCTION OF NATURAL RUBBER

(000 tons omitted)

	1947	1948		1947	1948
Malaya	646	700	Indo-China	38	40
Indonesia	295	430			
Ceylon	89	90	Africa	39	40

In 1948 the total rubber production in the world was 1.4 million tons.

More than 60 per cent. of plantation rubber is produced in the British Empire and most of the remainder comes from plantations managed or controlled by the Dutch. Although the U.S.A. consumes nearly two-fifths of the world's crop, her part in the production of rubber is practically insignificant.

In the early days of the rubber industry, there was no correlation between supply and demand, and this was responsible for violent fluctuations in the price of rubber to the prejudice of planters. The degree of maladjustment was increased by the fact that whenever there was a rise in price, there was immediately an expansion of cultivation, despite the fact that there was no real increase in demand. The result was an excess of supply over demand and a great fall in prices. Therefore, a scheme was made to control production. It was known as 'Stevenson Scheme'. The scheme urged the "producers to restrict their output to a definite percentage of their full capacity, the percentage fluctuating according to demand and resulting price levels." The great defect of the Scheme was that it was applicable only to the British plantations. The plan limited production in the British South-Eastern Asiatic territories so efficiently that prices rocketed sky-high instead of climbing to a moderate level profitable to planters and not prohibitive to buyers. High prices tempted the rubber-planters of the non-participating countries like the Dutch East Indies to increase the production to a considerable extent. So world production, in spite of limitation of production in areas covered by the Stevenson scheme, began to increase with the result that prices fell and stock accumulated. The Stevenson scheme was brought to an abrupt end in 1928.

An international rubber restriction agreement was then reached in which all the territories of South-East Asia producing rubber joined. The scheme began to operate on 1st April, 1934, with the object of regulating the production and export of rubber in order to reduce the existing world stock and maintain an equitable price level, reasonably remunerative to efficient producers. Production and export of rubber were prohibited beyond the agreed quotas.

The principal importers of rubber are the U.S.A., U.K., France, Germany, Canada, Japan and U.S.S.R.

CONSUMPTION OF NATURAL RUBBER

(000 tons omitted)

	1947	1948		1947	1948
U. S. A. ..	563	630	Canada ..	32	40
U. K. ..	154	195	Australia ..	23	24
U. S. S. R. ..	35	100	Germany ..	8	24
France .	61	84			

U.S.A. has recently acquired some control over the rubber plantations of Brazil and Mexico

Recently the *synthetic rubber* production has made much headway and is fast becoming a rival of natural rubber. The U.S.A. has many factories for the development of low temperature chemical rubber from which high mileage auto-tyres are made. If natural rubber is ousted from the field of tyre manufacture, it will be perhaps possible for synthetic rubber to outbeat natural rubber in the long run. Many other developments in the synthetic field are possible which may bring changes in the future industrial application of rubber "One such new item is a flexible new synthetic rubber with such hardy resistance to gasoline, oil, paints and most chemical solvents that it serves equally well in printing rollers and aeroplane fuel system parts." The production of synthetic rubber in 1948 was 500,000 tons

Oil-seeds (Vegetable Oil) —Almost all vegetable oils are extracted from fruits or seeds. Vegetable oils are in demand not only for salads and other food, but also for preparing perfumery, varnishes, lubricants, candles, soaps etc., as well as for various other purposes

The sources of vegetable oil are cotton-seeds, cocoanuts (copra), palm-nuts, olives, rape-seeds, sesame, peanuts or groundnuts, linseed, soya beans and castor-seed, most of which are found in the tropics and sub-tropics

Olive is a product of the Mediterranean region. The oil is extracted for cooking and salads and for use in spinning, weaving and soap-making. Spain, Italy, Greece, North Africa, Portugal and Southern France are noted for olive oil. Cotton-seed-oil is a good substitute for olive-oil, whose demand for

industrial purposes is greater than any other seed-oil. U.S.A., India, Egypt and Uganda are the large producers of cotton seed. Though the U.S.A. is the largest producer, it does not export it in considerable quantities because of internal demand.

The *cocoanut-palm* makes four principal contributions to commerce, viz., (a) copra, the dried kernel of the nut, (b) cocoanut oil, (c) residual cake, and (d) the fibre derived from the husk surrounding the nut. The oil which is extracted from copra is in demand not only for food but also for soap-making. Cocoanuts are largely found in the Philippines, the East Indies, Ceylon, Southern India and other islands of the Pacific. In some cases oil is extracted and exported from producing countries; in other cases, the trade is in the form of copra. The largest importer of copra is the U.S.A.

The *plant of the groundnut* is grown as an annual crop in most tropical and sub-tropical countries, requiring a light soil, with well-defined wet and dry seasons and a rainfall of 25 to 40 inches. It is an adaptable crop and can be grown by rotation with maize, millets and sorghum. The main importance of the nut is in the production of oil. The oil contents of the groundnut is about 42 per cent. while the residual press-cake forms a valuable cattle food. The nut is also used in the confectionery trade and for making pea nut butter.

The groundnut is cultivated in India, Brazil, East Africa, China, the Philippines and Korea. India is by far the largest exporter of groundnuts. The chief importing countries are France and Germany. In 1946, the world production of groundnut was 2.6 million tons.

GROUNDNUTS

(In millions of metric quintals) 1937

China	..	22.5	Nigeria	..	3.6
India	..	19.7	East Indies	..	2.0
French West Africa	..	7.1	Manchukuo	..	1.5
U. S. A.	..	5.7			

Linseed is merely another name of flax-seed, which is chiefly used in the preparation of paints and varnishes and oil-cloth. Linseed is largely grown in Argentina, Italy, U.S.S.R.

India, and U.S.A. Four-fifths of the entire quantity of linseed that enters into foreign commerce come from Argentina.

As far as the world trade is concerned, the linseed production of the U.S.S.R. is of no importance as it is entirely absorbed by the internal market. Of the other countries producing linseed, Canada is the only one of any importance. The principal countries importing linseed are the United Kingdom, France, Italy, Germany, Holland, Belgium and Sweden.

The recent features of the international trade in linseed are the increasing importance of Indian linseed in the United Kingdom and the heavy importations of Argentina and Indian linseed into the U.S.A. to meet an expanding demand. The world production of linseed in 1946 was about 14 million tons.

LINSEED

(In millions of metric quintals) 1937

Argentina	.	12.8	India	.	4.2
U. S. S. R.	..	6.3	U. S. A.	.	3.8

The seed of *sesamum* is an annual plant thriving in the tropical and sub-tropical parts of the world. It is an important source of oil in India and China. Palm-oil is obtained from palm fruit and is used for soap, candles and lubricants and also for making edible butter and fats. The palm fruits are found in West Africa and the East Indies. In India its cultivation for oil is practically unknown. In 1946, the world production of sesame was 497,000 tons against 654,000 tons in 1938.

Castor plant is cultivated in India, Brazil, Java, Indo-China and Manchukuo. The oil is extracted from the bean and is very useful for medicinal purposes and soap-making and also as a lubricant. The exports of castor-seed for oil from India go to U. K., France, U.S.A., Belgium and Germany.

Rape seeds and mustard seeds are extensively found in Europe as well as in India.

Soya beans grow in soils where cotton and maize are cultivated. Generally it grows best on rich loamy soils. It is sown in summer and harvesting begins from December.

Manchukuo is the largest producer of soya beans in the world. Other producers are Japan, China, India and the U.S.A.

SOYA BEANS

(In millions of metric quintals)

China	50·2	Korea	4·9
Manchukuo	33·5	Japan	2·8
U. S. A. .. .	10·8	East Indies	2·0

At the present time, soya bean has acquired a great commercial importance. Beans supply, meal, oil, green beans and dried beans.

USES OF SOYA BEANS

Meal—Breakfast foods, flour, soya milk, soya sauce, cakes, pastry, etc

Oil—Glycerine, enamels, varnish, linoleum, celluloid, lubricants, candles, rubber substitutes, etc

Green beans—Green vegetables, salads, etc

Dried beans—Soup, vegetable milk, coffee substitutes, boiled beans, etc

*QUESTIONS

1. What are the necessary conditions for the production of the following—(a) Rubber and (b) Beet? Name the principal countries in which these are produced
—(Cal Inter 1927).

2. Describe the geographical circumstances favouring the growth and the world distribution of sugar-beet and sugar-cane
—(Cal Inter 1931, 1933, 1941).

3. What are the necessary conditions for the successful cultivation of cotton? Describe carefully the regions where it is produced in India and the measures adopted for improving the quality and quantity
—(Cal Inter. 1931)

4. Who are the principal buyers of Indian Cotton? What are the chief sources of supply of cotton to the Lancashire Cotton Industry? Do you think that the British Empire can be self-supporting in this commodity?
—(Cal B Com. 1934).

5. Into how many classes is cotton divided? Give a short account of the chief sources of supply of the principal varieties of cotton.
—(Cal Inter. 1936).

6. What are the climatic conditions favouring the growth of coffee and tea? What are the principal countries of production and export?
—(Cal. Inter. 1934)

7 Examine the importance of any four of the following crops in India (a) Cotton, (b) groundnut, (c) jute, (d) linseed, (e) rice and (f) wheat
—(Cal. Inter 1934).

8. What are the main sources of supply of rubber and what countries control these sources? What are the possibilities of India becoming an important rubber producing country? —(Cal B.Com 1926).

9 Name the most important rice importing countries of the world. From what sources is rice imported into Great Britain and to countries of North Europe? What is the present position of India including Burma in this trade? —(Cal B.Com. 1930).

10 Name the places where the following are grown (a) sugar, (b) coffee, (c) flax, (d) Indian rubber and (e) tobacco
—(Cal Inter 1924).

11. What are the natural conditions required for the cultivation of cotton? What countries export cotton and to what destination?
—(Cal Inter 1925).

12 Compare and contrast the physical and economic factor associated with the production of rice and wheat. Mention the chief countries and ports engaged in the foreign trade in these commodities.
—(I. P. S. 1934).

13 What conditions are necessary for the successful cultivation of beet and sugar-cane? State accurately the areas in which sugar is manufactured. India produces large quantities of sugar-cane, but still imports sugar from other countries. Why?
—(I. P. S. 1930)

14 Discuss the conditions favouring the growth of (a) jute, (b) oil seeds, (c) coffee and (d) sugar-cane
—(Cal Inter 1935).

15 What climatic conditions are favourable or unfavourable to the cultivation of rice, cotton and sugar-cane? Explain fully the reasons
—(Cal Inter 1940)

16 What are climatic conditions which favour the growth of the following products —(a) coffee, (b) sugar and (c) wheat? Mention the different countries from which they are principally exported
—(Cal Inter 1940)

17 State the essential features of the distribution of wheat, rice and sugar-cane in the British Empire. Examine the position of each one of them in international trade
—(I. I. B. 1940).

18. Since 1933 the declining tendency of the prices of tea has been arrested and at present the tea market is ruling quiet. What factors happened to be responsible for this improved position of the industry? What steps, in your opinion, should be taken by the industry so that the improvement now visible may be of a lasting character?
—(Cal R. A. Hons 1941).

19. Name the principal silk-producing countries of the world. Do you think that artificial silk is seriously competing with natural silk?
—(Cal B. Com 1937).

20 Describe and account for the location and importance of sugar-beet producing regions of Europe. —(Cal B A 1942).

21. Discuss the supply and demand position of the principal cereals in the world to-day. What is the main cause for the mal-distribution of these commodities over the consuming countries, and how can it be removed? —(Cal. B. Com. 1943).

22. What are the necessary conditions for the production of (a) Rubber and (b) Beet? Name the principal countries in which they are produced —(Cal. Inter 1945).

CHAPTER IV

MINING

Mining is an industry in which minerals are extracted from the womb of the earth for the use of man. Minerals are used as raw materials for various industries. Modern civilisation is in many respects dependent on mineral products. Machines, ships, armaments, buildings, coins, nay, everything connected with modern civilised life is more or less associated with minerals. This is why when a mine is discovered, there is a scramble for its exploitation * No part of the world can be inhospitable for the seekers of minerals. The hot deserts of Australia and South Africa and the cold desert of Alaska have developed along with the discovery of minerals. When the gold-mine of the Servard Peninsula, near the Arctic Circle (Alaska), had been discovered in 1897, a regular goldrush began. Unlike agricultural crops, mineral product is fixed in quantity ; it cannot be increased or replaced. Once the minerals are extracted from the earth, they are gone for ever. Mining is, therefore, a kind of robbery, because it takes away something which it cannot give back. It robs Nature of her products. Minerals are decreasing rapidly and in future, civilisation may be threatened by their shortage

Minerals may be classified into—

(a) *Metallic minerals.*

Iron, copper, lead, tin, zinc, aluminium, silver, gold, mercury, antimony, platinum, manganese, nickel, chromium, cobalt, tungsten and vanadium.

(b) *Minerals used as fuel*

Coal, petroleum and natural gas

(c) *Structural materials.*

Cement, stones, lime, asbestos, asphalt, gypsum, clay, and sand and gravel.

* No nation has within its borders all the various minerals required by its industries. Hence all are bound together by a chain of economic dependence on each other in respect of various minerals

(d) *Minerals used chemically.*

Salt, sulphur, potash, magnesite, dolomite, etc.

(e) *Minerals of miscellaneous uses*

Talc (soap-stone), mica, precious stones, graphite, quartz, fuller's earth, etc.

Gold :—It is used mainly for coinage and for the manufacture of jewellery, and as such it is exceedingly valuable. The influence of gold on human life is great. The hunger for gold has led to the great development of South Africa and Alaska and in each of these areas marked movements of population followed the discovery of gold.

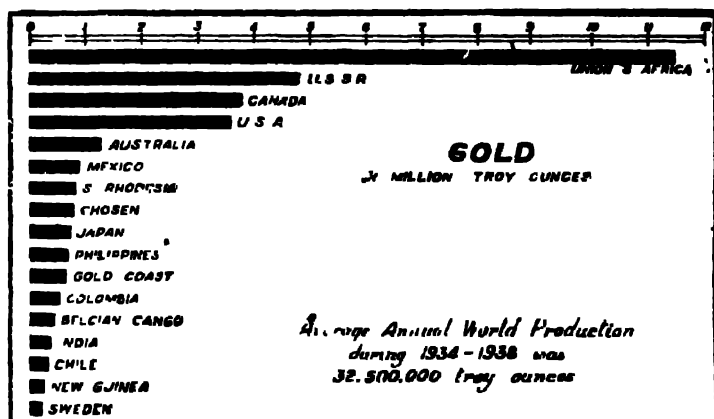


FIG. No. 20

Gold is widely distributed throughout the world, but a few countries produce it in great bulk. The considerable inequalities in production are of less actual importance than the still greater inequalities in possession and in resources for acquisition in other ways than by production.

More than 50 p.c of the total production of gold in the world comes from the Union of South Africa, which is undoubtedly the greatest producer in the world. The development of South Africa is mainly due to the discovery of gold fields. The construction of the lines of communication and the planning of many towns and cities have been mainly aimed at the exploitation of this product. It is, therefore, said that, "Gold mines are the backbones of South Africa". The region in which it is mined is the ridge of the northern rim of the

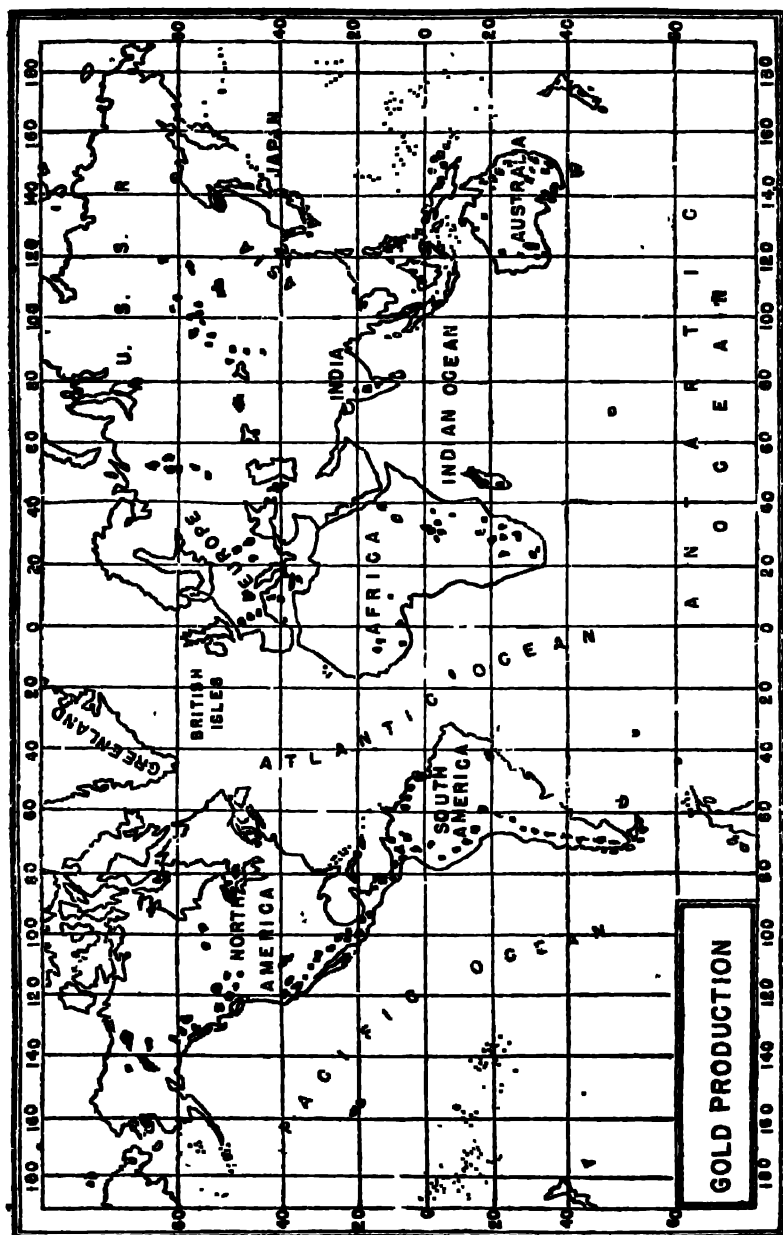


FIG. NO 21 Distribution of gold production Note the gold-bearing region in North America from Alaska to Mexico.

hills that separate the basins of the Orange and Limpopo. This ridge is called the *Witwatersrand* (or simply Rand). The Rand gold fields were discovered in 1885.

The Rand industrial zone of S. Africa mainly depends on gold. The largest Rand towns are Johannesburg, Germiston, Benoni, Booksburg and Krugersdorp. All these towns are connected by railways and are situated within 70 miles of Johannesburg, east and west. Nearly one-sixth of the Europeans of the Union or one-half of those of the Transvaal have settled in the "City of Rand".

To the west of Johannesburg, gold is found in the rocks of the ridge. The rocks have to be crushed to obtain the gold. The gold mines are worked there with considerable difficulties, for labour is scarce, transportation facilities are inadequate and the climate is hot. At present a large number of labourers is brought from India and China to work the mines on the *compound system*. Under this system, the labourers sign on for definite periods during which they live in compounds where they are fed and housed by the mining companies.

GOLD PRODUCTION IN THE UNION OF SOUTH AFRICA

	1940		
	£		£
Cape of Good Hope	22,100	Natal	94,200
Orange Free State	27,100	Transvaal	1874,850,570

Southern Rhodesia supplied 660,000 ounces of gold in 1943. In Belgian Congo, the bulk of the production comes from the Kilo-motor mines.

Gold is found in many parts of North America. The whole region from Alaska in the far north to Mexico in the south is rich in gold. The chief gold areas of North America are—

1. The Yukon basin of Alaska (the centre is Klondike).
2. British Columbia (the Fraser and Columbia basins).
3. California.
4. The plateau of Idaho.
5. The Eastern Rocky field (the Montana and Dakota).
6. The plateau of Colorado and Arizona
7. Eloro in Mexico.

More than one-fourth of the world's gold supply is raised in North America. Recently a few gold fields have been dis-

covered in Ontario in Canada and there are still many to be discovered. The production of gold in Canada in 1942 was about 5 million fine ounces.

Gold is the most important mineral product of Australia where it is found practically in all the States. The richest deposits are, however, found in Western Australia, Queensland and Victoria. Ballarat and Bendigo are the two chief gold-producing districts of Victoria. In Queensland the chief mining centres are Charlestown and Mt Morgan. Western Australia has rich supplies of gold in Coolgardie and Kalgoorlie. In 1941 Australia raised 1.5 million fine ounces of gold, valued at £16 million.

In India the greater portion of the gold produced comes from the Kolar fields in Mysore. Burma produces a small quantity of gold, mostly extracted from alluvial deposits.

The position of the British Empire and Commonwealth as producers of gold is unassailable as they control territorially and financially more than 60 p.c of the gold resources of the world

Silver —It is obtained native, and also in combination with other metals the chief of which are gold, lead and copper. Now-

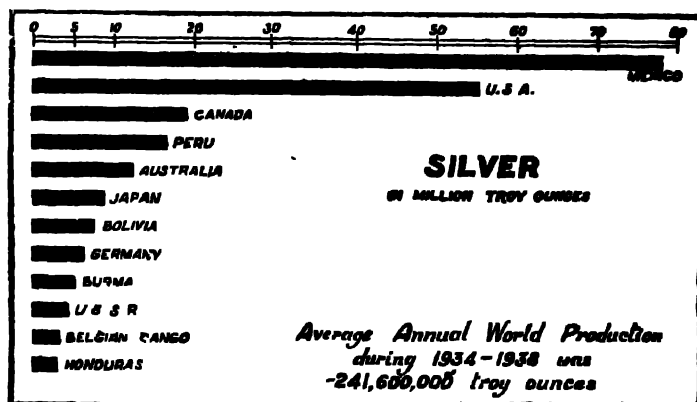


FIG. No 22

adays most of the silver produced is a by-product of some other metals, and, therefore, its output is an index of the mining of those metals. Silver is used in the manufacture of ornaments, table utensils and coinage and also for plating base metals.

The position of the British Empire in respect of silver production is not very satisfactory. Only a little more than one-sixth of the world's silver resources is controlled by it.

North America produces more than two-thirds of the world production. The whole mountainous range of the west from the U. S. A. to Chile in South America is rich in silver. Mexico is the leading producer of silver and she mines nearly more than one-third of all the world's output of new silver. In the U.S.A. silver mines are worked in Idaho, Montana, California, Utah, Texas, Colorado and Arizona. Canada is the fourth greatest producer. More than half of the silver produced in Canada is obtained from Ontario, and the rest from British Columbia. The production of silver in Canada for 1943 was 21 million fine ounces. In Peru the working of mines frequently suffers from political disturbances. With the restoration of stable government, it is expected that production will increase in that country. At present it contributes about 8 p.c. of the world's total supply.

Australia is very rich in silver, large deposits are found in New South Wales and Western Australia. In Europe a small output is obtained from Germany and Spain.

Japan and India are also producers of silver. In India there are no silver mines, it can only be found as a by-product in the mining of gold, lead, tin, etc. Almost the entire silver supply of India is obtained from the Kolar Gold Fields of Mysore.

As the production of silver is increasing rapidly, the price-level of the metal is going down. In 1933 Mexico, U. S. A., Canada, Australia and Peru made an agreement to restrict the output of silver with the object of stabilising its price.

Platinum —It is a valuable metal used in photography, dentistry, in the electrical and jewellery business and in X-ray works. It is also used in the manufacture of handbags, cigarette cases, pocket lighters and knives. During recent years its use in the setting of diamonds has increased considerably. Russia has long been the chief producer, and though recently surpassed in production by Canada, it still has a reserve of many million ounces.

Canada is the leading producer of platinum and contributes more than one-third of the world-production. Most of the

Canadian output is raised in British Columbia and Ontario. Russia has rich deposits of platinum in the Ural mountains. In

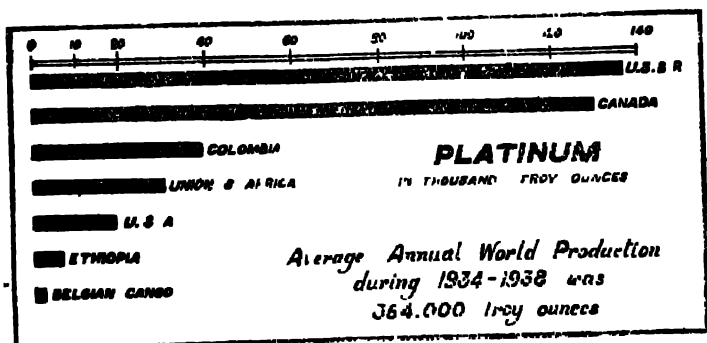


FIG No 23

South Africa, the principal deposits are in the Waterberg, Lydenberg and Rustenberg districts of the Transvaal.

Osmium and iridium are metals akin to platinum. These are produced mainly in Canada U S. A and Australia also produce platinum.

Lead.—It is very commonly found in association with zinc or silver, and is used for a variety of purposes in industries.

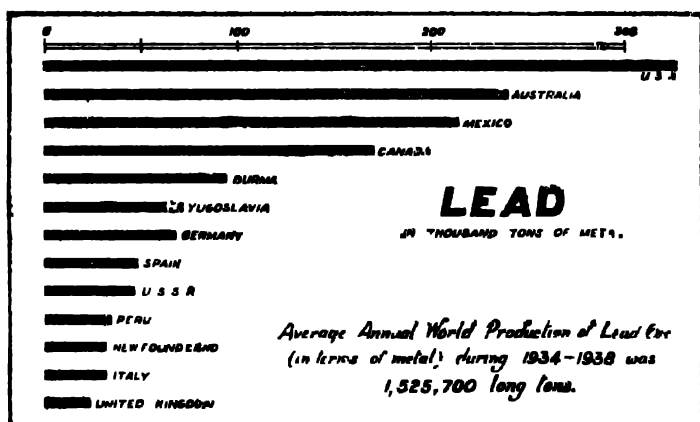


FIG No. 24

Lead commands demand for paints, glassware, typewriter, automobiles, aeroplanes, locomotives, printing industries, musical instruments and bullets.

The leading producer is the U. S. A. where it is found in Missouri, Idaho, Oklahoma, Colorado, Montana, Nevada, Utah, New Orleans and New Mexico. In spite of the fact that production in the U. S. A. is much larger than in any other country in the world, her domestic requirements are so great that supplies are often drawn from other producing countries, e.g., Mexico, Canada, Spain and Australia.

The British Empire controls nearly one-fourth of the total supply.

Zinc :—Zinc-ore is generally associated with lead and copper ores and is used to coat or galvanise iron in order to prevent rusting. It is also used in the manufacture of paints.

CHIEF ZINC-ORE-PRODUCING COUNTRIES IN 1935

(In 000 metric tons)

U. S. A.	469	Poland	45
Australia	151	India	45
Canada	145	Spain	33
Germany	136	Sweden	30
Mexico	136	N. Rhodesia	21
Newfoundland	67	Japan	18
Italy	50	Norway	6
Yugoslavia	47	Belgium	3
U. S. S. R	46	U. K.	1

U. S. A. surpasses every other country in zinc production and contributes about 40 per cent of the world's supply. Oklahoma, New Jersey, Kansas and Utah are the principal sources of supply. As a result of some recent discoveries of zinc mines, Australia has become the second largest producer. Canada is a close rival of Australia. Northern Rhodesia contains large deposits of zinc ore.

Copper .—Copper usually occurs in combination with silver, gold, iron, lead and sulphur. The demand for this metal is considerable, for it is largely used in the electrical industry. Mixed with zinc, it produces brass; with tin, bronze; and with nickel, German silver.

In the U. S. A. the copper ores are found in Montana, Arizona, Nevada, Colorado, Utah and Lake Superior Coast. The greatest copper-producing area in the world is the Butte

district (Montana) in U. S. A. The second largest copper-producing district in the U. S. A. is the Lake Superior district where the mines are located in the vicinity of Houghton. U. S. A. produces more than 20 p c. of the world's total. In 1930 it contributed more than 47 p c. of the world production. The production of copper in the U. S. A. for 1942 was about 2 million short tons.

Chile is the world's second largest producer of copper. The reserves of copper in Chile are vast and are estimated to contain about one-third of world's reserves. In Asia the position of Japan in respect of this metal is very enviable. India also produces a small quantity of copper.

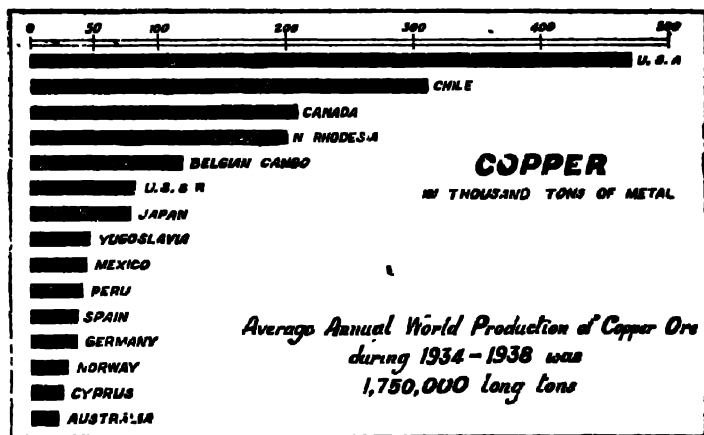


FIG No 25

The production of copper in Europe being insufficient for her requirements, import from overseas is of considerable magnitude. The principal copper-producing countries of Europe are Spain, Germany and Norway.

Although the British Empire has increased her production enormously within recent years, her contribution is only 8 p.c. of the world's total. This quantity is not sufficient to meet the requirements of the Empire. Canada ranks second in copper production. Northern Rhodesia raises an appreciable quantity.

Recent explorations have proved that the Katanga deposit in Belgian Congo is one of the richest in the world. What gold and diamonds have been to South Africa, copper promises

to be for Congo. The difficulty of securing labour and the excessive cost of transportation tend to check rapid development. The other important producers are Mexico, Japan and Peru.

From 1935 to the outbreak of the War the world market of copper was controlled by an International Copper Export Cartel, whose members included the U. S. A., Canada, Peru, Mexico, Chile, Belgian Congo and Rhodesia.

Aluminium .—It has become very important in these days of aviation. Fifty years ago, its importance was practically nil. It is also used in motor cars, railway carriages, electrical and armament industries.

Aluminium is extracted from bauxite and cryolite. France, Dutch Guiana, Gold coast, Br. Guiana, Hungary and the U.S.A. produce bauxite. Cryolite is found only in Greenland. Though the Government of Greenland restricts the production of cryolite according to budget requirements, it has never shown the least sign of differentiating between foreign customers. Cheap power is necessary for smelting aluminium ore.

ALUMINIUM-PRODUCING COUNTRIES IN 1940

(In 1,000 metric tons)

Germany	..	..	240	Italy	.	..	..	40
U.S.A	.	..	187	U.K.	.	..	..	35
Canada	..	..	110	Japan	..	..	..	35
U.S.S.R.		..	55	Switzerland		..	..	28
France	..	..	50	Norway		..	..	15

The world production of aluminium in 1940 was about 1 million metric tons as against 490,000 metric tons in 1937. Till 1938, the U. S. A. was the leading producer.

The United States is now the largest producer of aluminium and aluminium products in the world. It raises more than 25 per cent. of the world's total output of the aluminium ore.

The present American output of primary aluminium is at the rate of 650,000 short tons a year. Much of the U.S. consumption represents re-armaments. Canada produces aluminium at the rate of about 350,000 short tons annually. This Canadian output can be further increased. A new plant is being erected in British Columbia for aluminium production. The

U. K. aluminium production is relatively small, about 30,000 tons a year, and is operating at capacity. Britain depends mainly on Canada for this metal.

The modern method of extraction has greatly increased the output of this metal, and consequently prices have been reduced. As a metal it is light, tough and non-corrosive. Aluminium can be easily manufactured where power is cheap. In France, Germany, Norway and Italy it is worked very advantageously because water-power is available at a low cost. In pre-war time, Germany was the greatest aluminium producer.

Tin :—This metal is useful in manufacturing packing cases, tin roofing and many other articles. Tin has considerable demand in fish and meat packing centres. The principal countries noted for tin production are Malaya, Bolivia, Great Britain, East Indies, China, Germany, U. S. A., Australia, Nigeria and Belgian Congo.

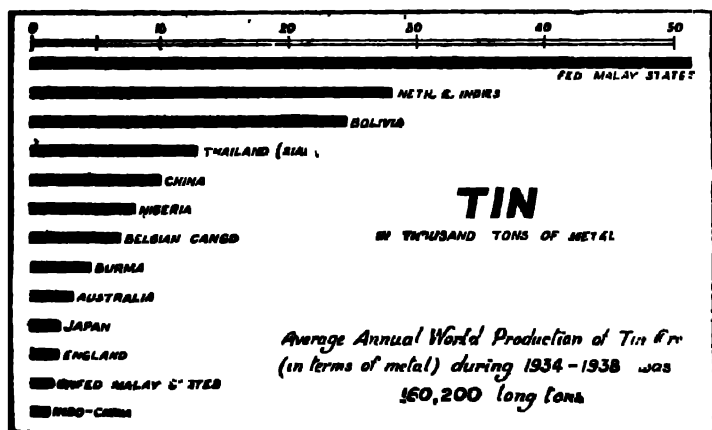


FIG. No 26

In Malaya, the deposits have been worked at Perak, Selanger, Pahang and Negri Sembilan, the first two furnishing 90 per cent. of the total. Small deposits are also located in Johore, Kedah, Kelantan, Perlis, and Trengganu. The tin deposits of the East Indies are of considerable importance. Most of the deposits are in Banka, Sumatra, Singkep and Billiton.

About 60 per cent. of the world's total tin supply is obtained from Malaya and the East Indies. In Bolivia the proper development of this metal is subject to many handicaps, specially the absence of communications. Most of the tin mines of Bolivia are found at altitudes above 12,000 feet. In 1943, the production of Bolivian tin was 40,000 tons. British Empire and Commonwealth are in a very strong position so far as this metal is concerned, as they control more than 50 per cent. of the total supply. They produce more tin than their own requirements.

The greatest consumer of tin in the world is the U. S. A. where the meat packing industry is practically dependent on the supply of tin imported from foreign countries.

Mercury or Quicksilver :—The chief use of this ore lies in the fact that it is employed in the extraction of gold and silver from the ore. It is also used in the manufacture of thermometers and barometers, for medicine and ointment, and for the silvering of mirrors.

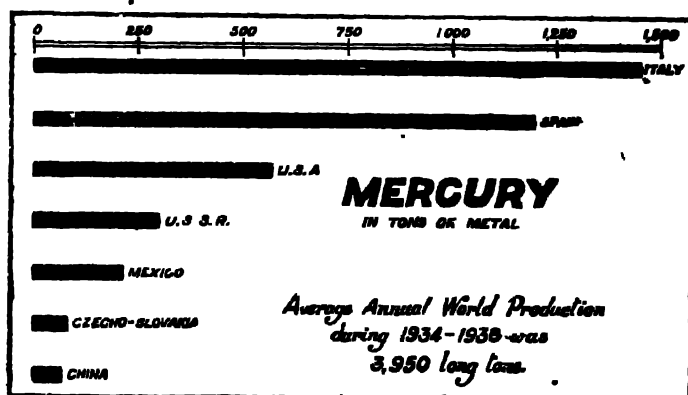


FIG. No 27.

Although mercury is found widely distributed throughout Italy, the principal deposits are in Tuscany, the Idria and Trieste. In Spain, the deposits are found in the Almedan mine in the province of Ciudad Real and in Granada and Oviedo. The chief States of the U. S. A. supplying mercury are, in order of importance, California, Oregon, Texas, Nevada, Washington and Arkansas. In Russia, mercury is mined at Nikitova in the

Donetz basin. There are a number of small mercury mines in Mexico, but the production is very small, because of political disturbances and labour troubles.

Iron .—Iron is by far the most useful of all the metals.¹⁸ The success of almost every industrial enterprise depends upon the extensive and efficient use of machinery and other economic equipments made wholly or in part from iron and its alloys. "Leadership in industry and trade demands an abundant and efficient use of mechanical equipment which in turn necessitates a plentiful supply of iron and coal."

The value of an iron ore deposit depends not only upon its richness in iron, but also upon its location and the ease or difficulty of mining. Some of the richest iron ore deposits of the world are at present of little economic value because of

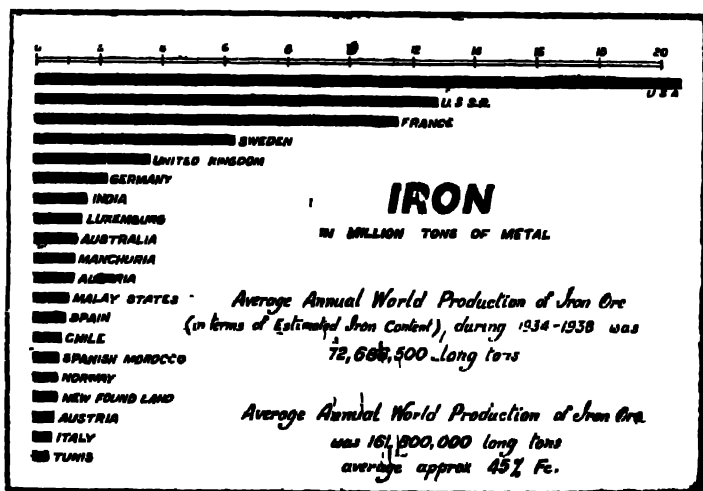


FIG. No 28

their remoteness from the great industrial centres and the resultant expense in transporting them to the places where they may be utilised. This is specially true of the great iron ore deposits of Southern Brazil which contains the largest reserves of iron ever discovered. Many impurities occur in combination with iron ore which are to be removed from the ore. Usually coke and limestone are mixed with iron ore and heated to high temperature. Limestone absorbs the impurities of the

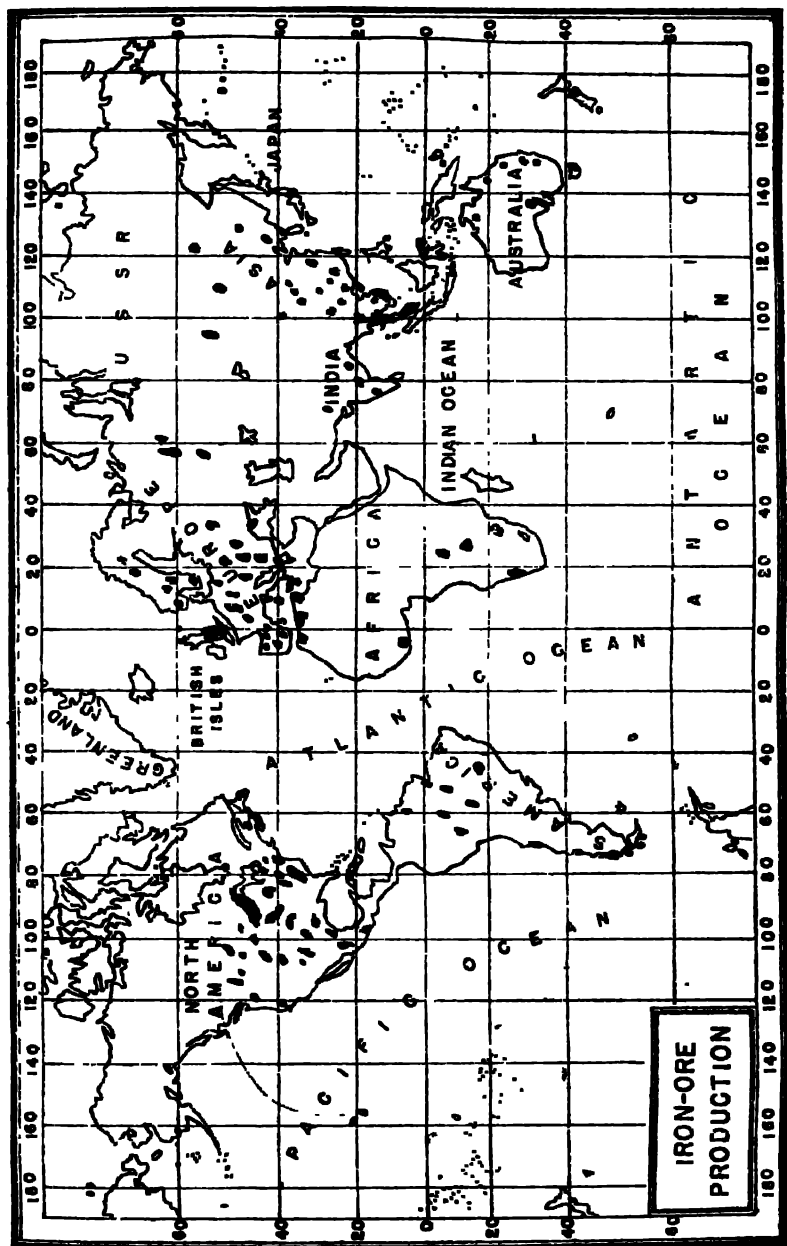


FIG. No 29. Distribution of iron-ore production. Note the chief iron-ore-producing regions in the U. S. A. and Western Europe.

ore. The metal thus obtained is known as pig iron. The pig iron is smelted in areas where coke is much available. From pig iron is manufactured steel of various kinds by mixing with it chromium, manganese, tungsten, vanadium, nickel etc., either for hardness or brightness.

Iron ore deposits are scattered all over the world, but the important ones are found in the U.S.A., France, U.S.S.R., Great Britain, Germany and Luxemburg.

In 1940 the world production of iron ore was about 90 million tons of which the U.S.A. contributed 38 million tons.

U.S.A. raises nearly one-fourth of the total production of iron ore of the world. There are three principal belts in the U.S.A. producing iron ore—(a) the Mesabi range in Minnesota, (b) peninsular Michigan and (c) the Appalachians. The Alabama district in the Appalachians, though it produces a large quantity, suffers from its situation at a great distance from the ports. Despite its enormous production the U.S.A. imports considerable quantities of iron ore from Chile, Cuba, Sweden, Spain and French Africa. The production of iron ore in the U.S.A. for 1942 was nearly 119 million short tons.

In United Kingdom the bulk of iron-ore supply comes from Yorkshire, Lincolnshire, Northamptonshire, Cumberland and North Lancashire, which provide the country with two-thirds of her requirements of ore. The United Kingdom raises about 5 per cent of the world production of iron ore. France obtains the bulk of her iron ore from the Lorraine Fields, which is the richest area in iron-ore in all Europe. Normandy and the Pyrenees are the two other areas of France noted for iron-ore. Before 1919 Germany was the leading producer of iron-ore in Europe. The loss of Lorraine and Luxemburg was a staggering blow to Germany because these two places used to supply 75 per cent. of the country's total output. At present Germany obtains her supplies from Vogelsburg, Sudetan lands, south-east of Silesia, northern slopes of the Erzgebirge (Saxony), Westphalia, the extreme east of the Alpine zone in the province of Styria and Austria. Norway has a considerable production of iron-ore in the north—almost on the Arctic Circle. Large deposits are also available in Central and Southern Norway. In Sweden, valuable deposits are found at Kiruna and Gellivare.

in the north and at Denuemora in the centre. Spain is fortunate in having large deposits of iron-ore. But the ore is little used in the country and is mostly sent to Germany and Britain, Spain raises above 2 per cent. of the world's iron ore.

Recent surveys of iron resources have revealed new supplies in Soviet Russia ; the Donetz basin and Tula are no longer the only suppliers. The principal iron-ore regions are

- 1 In the neighbourhood of Kursk
2. Near Orsk in the Southern Urals
- 3 At Telbes in the Kuzmas region
4. The Murmansk peninsula
5. The Magnet mountain near Magnitogorsk in the Urals
- 6 At Krivoi Rog in the Ukraine This was the principal iron-ore region before the Revolution.

All these regions have been developed recently as industrial areas because of the great demand for armaments in the war-fronts during 1942-45

In Asia iron-ore is found in India, China and Japan. Though iron-ores are vast in China, the development is very small. The instability of government and the lack of railways and roads have hindered the working so long. The iron-ore of Japan is not sufficient to meet the requirements of her steel industry. There are only two important fields—one at Senmō on the east coast of Honshū and the other at Muroran in Hokkaido. Some iron-ore is found in Korea and Formosa, but still Japan imports large quantities of iron-ore from China. Her economic control over Manchuria has greatly benefited the iron and steel industry of Japan, because iron-ore is abundant there. In India the most important iron deposits are in Singhbhum, Keonjhar, Bonai and Mayurbhanj States of Orissa, where recent discoveries include what appears to be a range of iron-ore running almost continuously for forty miles. The most important steel production centre is Tatanagar. Pakistan has no iron-ore deposits. The use of scrap iron in Pakistan as a source of iron metal will become important in future.

Although iron-ore is found all over the world, only two areas are important for the manufacture of iron and steel—U.S.A. and Western Europe

CHIEF STEEL-PRODUCING COUNTRIES

(Average annual percentage)

(1928-38)

U.S A.	37	Italy	3
Germany	16	Czechoslovakia	2
U.S.S R.	11	Luxemburg	2
U. K.	9	Canada	1.1
France	8	Poland	1.5
Japan	4	Sweden	1
Belgium	3		

In the U.S.A. the noted steel production areas are Minnesota, Michigan, Pennsylvania and Alabama. In Europe the chief belt lies from Northern France through Luxemburg and Belgium into the Westphalia district of Germany. This belt produces most of the iron and steel output of Western Europe. The area is centrally located in one of the finest market regions of the world; it is served by an excellent network of railways, canals and rivers and much of the area is *undertaken* with coal.

In the production of iron and steel, Great Britain is one of the leading countries of the world. Here iron-ores are found in close proximity to coal. Moreover, nearness to coasts gives her iron easy access to sea. Limestone, which is necessary for smelting, is also found near-by.

Czechoslovakia, Poland, Spain and Italy manufacture some iron and steel. Northern Sweden contains the largest deposits of the high grade iron-ore of Europe.

Coal :—It is equally important for commercial and industrial purposes. It is the greatest source of power for manufacturing, mining and transportation. Its great advantage in competition with oil is that it is found in a much bigger variety of places and is generally closer to the centres of large scale industries. Its by-products are equally important for industries. The principal by-products are tar, ammonia, gas, coke, crude oil, benzol, naphtha, sulphur, etc. The production of liquid fuel from coal is becoming increasingly important, and Germany heads the list in this direction. Coal is mined in its perfect state and is thus ready for use immediately on its extraction from the ground.

The value of coal depends upon the degree of its heating power. There are three kinds of coal—lignite, anthracite and bituminous. Lignite is a woody kind of coal, sometimes of a brown colour, and hence known as *Brown Coal*. It contains generally 70 per cent. of carbon. The coal is of inferior type. *Anthracite* is difficult to light, burns with little flame but produces great heat when it burns. It is of the best variety. *Bituminous* coal contains more than 80 per cent of carbon. It is mostly used as fuel for domestic purposes.

The principal coal-producing countries are U. S. A., Germany, U K, France, Poland, Russia, Japan, Czechoslovakia, Belgium, China, India and Australia.

PRODUCTION OF COAL BY COUNTRIES IN 1940

(In million metric tons)

U S A.	456	Poland	38
United Kingdom	231	India	29
Germany	186	Belgium	25
U.S.S.R	147	China	17
Japan	53	Manchuria	11
France	46		

The world production of coal in 1938 was 1,232 million metric tons.

At present the bulk of the coal production of the world is concentrated in a few of the great industrial countries. U S A., Germany and U.K. are the leaders in the industry. Although these three countries support 12 per cent. of the world's population, they produce approximately 75 per cent. of the world's total output of coal.

U.S.A is the leading coal-producing country in the world and supplies more than 43 per cent. of the world's total. There are three important coal-fields in the U.S.A.: (i) the Appalachian coal-fields, (ii) the Rocky fields and (iii) the interior coal-fields. The Appalachian coal-fields, beginning from Pennsylvania to Alabama, contain the finest bituminous coal in the world. Pennsylvania alone contributes nearly half of the total supply of the U.S.A. The interior field includes Iowa, Kansas, Illinois, Indiana, Missouri, Dakota and Nebraska. The Rocky

fields have not yet been fully explored because population is sparse there.

Great Britain occupies the third position in coal production. The coal-fields of Great Britain have three great advantages. —

(a) Coal and iron are found together.

(b) Coal-fields are within easy reach of the sea.

(c) Limestone, useful for smelting, is often found with them.

In Great Britain there are four important coal-fields : (i) Scotland area, (ii) Pennine Range area, (iii) Midland area, (iv) Wales area. In Scotland rich deposits of coal are found in the Clyde basin, in Ayrshire and along the bank of the Firth of Forth. These areas have exceptional transportation facilities by sea, canal and rail. The Clyde basin is the most important ship-building centre of the world. On either side of the Pennine Range there are large deposits of coal. Lancashire and Yorkshire are the two important centres in this area. Cotton textile industry has developed in Lancashire and woollen industry in Yorkshire. In the Midland area the important districts are North Staffordshire, Leicestershire, Warwickshire and South Staffordshire, where many important industries (like motor car, cycle, boot, lace, tobacco, iron and steel and watch) have developed. South Wales coal is worked more for export than for use as power in the local industries.

Till 1914 the United Kingdom was the leading coal exporting country in the world. "The proximity of British coal measures to the sea, together with the special quality of the coal, had favoured the development of coal exports to European markets ; so that even Germany, with an export trade of her own, found it cheaper to obtain coal from England for the districts served by her Baltic ports, than to bring it overland from Silesia and Westphalia " Since 1921 the conditions have been highly unfavourable to the British coal industry. The advance of oil and of hydro-electric power, the increased use of lignite, economies in combustion and the development of new coal resources in her former markets have affected adversely her coal exports. From January 1947 the coal mining industry of Great Britain has passed into public ownership and control by Nationalisation Act of 1946. A Board has been set up to have a monopoly of working and getting coal into Great Britain.

In respect of coal production Germany occupies the second place. The Ruhr basin, Westphalia, Saxony, Silesia, and Bavaria are the important areas. The Ruhr basin produces about 80 per cent. of Germany's coal. Germany has no anthracite coal; her coal is either bituminous or lignite.

France has considerable deposits of coal, but the coal-fields are scattered over the country. There are two important fields—North Coal-fields and St. Etienne Coal-fields.

Soviet Russia is the fourth largest coal producer. The annual output of coal is more than 100 millions of metric tons. In 1913 the output was only 29 millions of tons. Before the Revolution of 1917 the Donetz coal-field alone supplied more than 90 per cent. of the Russian output. To-day the Donetz field is no longer an important producer. The principal coal-fields of Soviet Russia are Kuzbus (West Siberia), Tunguz (Yenesei basin), Irkutsk, Donbas, Pechora (north of European Russia—in the Tundra), Burein (in the Ainur basin), Karaganda (Steppe region of Asiatic Russia), Moscow, Ural and Transcaucasus (near Batum).

Africa has large deposits of coal in Natal, the Cape of Good Hope and the Transvaal. The coal of Africa is of poor quality, with the exception of that of Natal.

In 1940 Japan raised 53 million tons of coal and obtained another 70 million tons from her Empire. In spite of this large production, Japan's industrial expansion plan was hampered by coal shortages. The two most important coal fields of Japan are located in Hokkaido and in Kyushu, the former supplying 40 p.c. and the latter 50 p.c. of the country's total coal. More than 90 p.c. of her coal is of mediocre quality—low bituminous or sub-bituminous. Her coal is not generally suitable for the production of high quality metallurgical coke.

China is very rich in coal but its development is slow. Chinese coal is chiefly of anthracite type, and is found practically in every province. In the Yang-tesi-kiang basin, the mountains of Shanshi, near the great Northern bend of the Hoang-Ho and in Shantung peninsula, coal-fields are prominent. In near future China may become one of the leading coal producers of the world.

India occupies the eighth place in the list of the coal-producing countries of the world. The average annual production is a little above 23 millions of metric tons. But the coal-fields are very unevenly distributed. More than 83 p.c. coal of India comes from the two fields of Raniganj in Bengal and Jharia in Bihar. Other fields are found in C. P., Hyderabad, Central India, Assam and Rajputana. In Pakistan, coal is found in the west Punjab. The annual production of coal in Pakistan is about 388,000 tons against its normal requirement for $3\frac{1}{2}$ million tons of coal.

Petroleum :—It is a general name given to oils, which flow freely or are pumped from holes or bores in the earth. It stands second among the minerals in the value of output, surpassed only by coal. Its products are essential to the progress of many industries.

U.S.A., Venezuela, Russia, Persia, Rumania, East Indies, Mexico, India and Burma are the principal oil-producing countries.

PETROLEUM PRODUCTION

1939

	long tons	P C
U S A.	167,705,000	60.81
U. S. S. R.	29,630,000	10.75
Venezuela	27,657,000	10.03
Iran	10,192,000	3.70
(Dutch)—East Indies—(British) Borneo & Sarawak	8,194,000	2.97
Rumania	6,761,000	2.45
Mexico	5,434,000	1.97
Iraq	4,298,000	1.56
Columbia	3,068,000	1.11
Trinidad	2,541,000	0.92
Argentina	2,386,000	0.87
Peru	2,186,000	0.79
India and Burma	1,435,000	0.52
Bahrain	1,117,000	0.42
Canada	883,000	0.32
Germany	599,000	0.22
Poland	541,000	0.20
Japan and Taiwan	344,000	0.12
Ecuador	291,000	0.11
Egypt	222,000	0.08
Albania	93,000	0.03

PETROLEUM PRODUCTION—(contd.)

	long tons	P.C.
France	71,000	0.03
Saudi Arabia ...	66,000	0.02
Hungary	43,000	0.02
Other countries ...	48,000	0.02
World Production ...	275,805,000	
North America ...		63.1
(U. S. A. ..		60.81)
Europe		13.7
(U. S. S R ...		10.75)
Asia		9.4
South America ...		13.8

The chief products of petroleum are gasoline or petrol, fuel oil, kerosene and lubricants. These are used in steamships, railroads, manufacturing and commercial heating and domestic heating. Vaseline and medical paraffin oil are also obtained from petroleum. The products of petroleum are so essential to industrial progress that all the major powers of the world are seeking to gain control of oil-fields and are searching diligently for possible reservoirs not yet discovered. During the last few years the struggle for the possession of petroleum has been so keen that the control of major oil-fields has caused more international concern than that of any other mineral.

U. S. A. is the largest petroleum producer of the world ; it raises more than 60 per cent. of the world's output. The important states are Oklahoma, California, Texas, Kansas, Louisiana, Illinois, Pennsylvania, Ohio, West Virginia and Kentucky. "A large proportion of the refined oil produced in the U. S. A. is exported and the markets are scattered all over the world, as is only natural in the case of a commodity having such important uses. Despite the enormous increase in output the demand has kept up with the expansion of motor transport and the conversion of many steamships to burn oil fuel instead of coal."

The largest oil-fields is found in East Texas. It has a length of about 40 miles and an average breadth of about 7 miles ; 25,800 wells have been drilled. The oil-fields of California are very deep.

Russia takes the second place and her two main fields, Baku and Grozny, on opposite side of the Caucasus, are con-

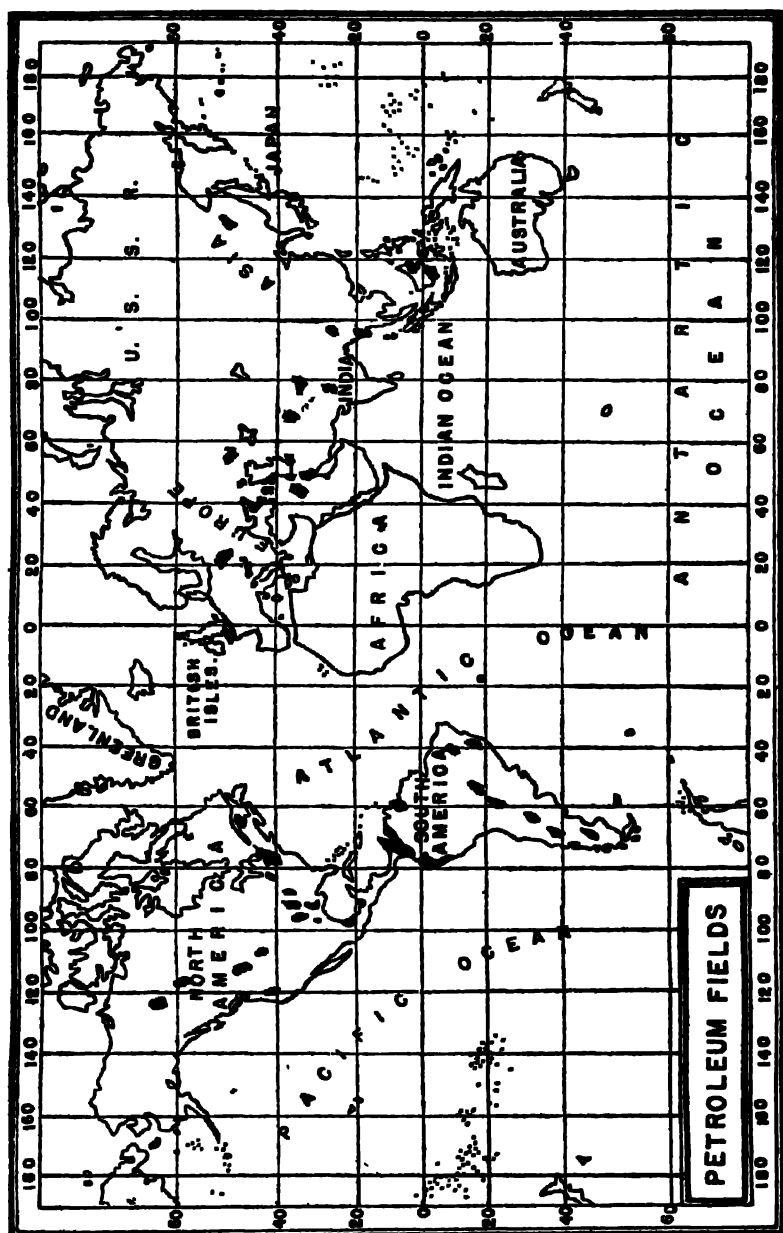


FIG. No 30. Distribution of petroleum fields. Notice the great concentration of oil-fields in the Americas.

nected by pipe-lines with the Black Sea. The oil belt extends along the whole length of the Urals on their western side from Ukhta in the north to Sterlitamak in the south. Ufa in the south-western slopes of the Urals has become so important in recent years that it has come to be known as "Second Baku".

The output of Soviet oil industry in 1941 was a little above 38 million tons. The Soviet Asia contributes about 15 per cent. of the total production. Uzbek, Kazakh and Turkmen in Soviet Asia contain large deposits of oil. In the Far East, the only Soviet oil field is in the island of Sakhalin where the annual production comes to about 800,000 tons.

U. S. S. R. OIL PRODUCTION IN 1938

	(Percentage)		
Caucasus-Caspian	90.0	Volga-Urals	4.0
Central Asia	4.9	Far-East	1.1

The third great oil centre is around the gulf of Maracaibo in Venezuela, where the oil-fields extend into Columbia. In 1939 Venezuela produced a little more oil than U. S. S. R. Mexico, once the only rival of the U. S. A. in production, has dropped to the seventh place.

In 1945, the Middle-East produced five and a half per cent. of the world's oil supplies, but its chief interest to the oil companies lies in its vast potentialities. The Kirkuk oil-field in Iraq stretching for 70 miles, is one of the greatest single oil-fields in the world. There are four oil zones in the Middle-East—Persia, Saudi Arabia, Iraq and Egypt—and the production of all has been greatly increased during the war. In Iraq, the oil-fields are situated at Baba Gagar, a few miles north of Kirkuk. These oil-fields are being exploited by a British Company. A pipe-line has been constructed to join these fields with the Mediterranean sea board. The pipe-line carries annually four million tons of crude oil to Haifa, 620 miles away, and to Tripoli, 540 miles away. At Haifa and Tripoli the oil is loaded into sea-going tankers and transported to the world's markets.

"The oil-industry of the peace-loving countries is making an all-out effort, industrially and financially, to expand Middle-

East production." The development of the oil resources of the Middle East would reduce the demand for American oil in the European countries. To relieve the pressure of demand for American oil, it will of course be necessary to solve the transportation problem in the Middle East by constructing pipe lines from the Middle East fields to the Mediterranean coasts. At present the Middle East oil is carried by tanker fleet.

There are two oil-bearing area on either side of the Himalayan arc. The one on the east and by far the most important, includes Assam and Burma contributing ninety-five per cent. of the total output ; the other, on the west, includes the Punjab and Baluchistan in Pakistan. Pakistan raises 15 million gallons of petroleum annually as compared with Indian Union's 82 million gallons. The most prolific oil-fields are found in the Irrawady valley in Burma from which nine-tenths of the indigenous petroleum are obtained.

Japan's annual production of petroleum is less than the daily production in the United States. Japan's petroleum belt lies along the Japan sea coast from Hokkaido on the north to Northern Honshu. The western part of North Honshu includes the country's two principal oil fields, *the Akita* and *the Nigata*. From these two fields, 95 p. c. of Japan's domestic oil supply is derived.

The Americans and the British are making investigations to find out new fields. Just before the war exploration was most active in Egypt, Sinai, Palestine, Syria, Arabia, Iraq, Iran, Afghanistan, Asiatic U. S. S. R., India, Burma, Dutch East Indies, Borneo, Sarawak, Australia and the New Zealand. Exploration is being undertaken in Gold Coast, Nigeria and Equatorial Africa. The British Empire has never been self-supporting with regard to petroleum and is dependent on supplies from outside countries. Before, 1942 the Empire controlled only 5 p.c. of the world's petroleum output. The figure came down to 3 p.c. by the loss of Burma, Borneo and Sarawak in the second world war. This figure also included the production of the Anglo-Persian oil-fields. The U. K. had extended her financial interest to the oil-fields of Mexico and Venezuela till the outbreak of the Second World War.

Petroleum is very easily and economically transported and the usual method of movement is by tank steamer or by pipe-

line. As a source of power, petroleum competes with coal. Formerly all steamers used coal as fuel; but to-day nearly 50 p.c. of these vessels use oil. Oil enjoys certain advantages as steamship fuel inasmuch as it conserves space and also because oil-driven ships can be handled with a smaller crew.

Signs of depletion of natural stocks of oil are distinct and even disquieting in many places. Great care is being taken to effect economy in the use of oil. In many countries of Europe, alcohol is mixed with petroleum to the extent of 20 p.c. for motor vehicles. The sources of ethyl alcohol are oil-seeds, sugar-cane, potatoes and timber. In the utilisation of vegetable oil contents, the British Empire and Commonwealth enjoy unique advantages. Germany produces synthetic oils by the hydro-genation of coal and tar.

Natural gas :—It is found in association with petroleum. Nearly 98 p.c. of the world's natural gas is raised in the U. S. A. where it is exploited in the Appalachians, Gulf Coast and the central region. Natural gas has tremendous heating power and is very economical.

Water-Power :—Water-power is a major source of mechanical energy which has revealed a new phase of industrial usefulness. Unlike coal, hydro-electricity is inexhaustible. Water-power is a perpetual mine, and every horse power generated hydraulically represents an annual saving of approximately 4 tons of coal. Its introduction has freed many countries from the great drawbacks arising out of the absence of coal. Norway, Switzerland, Finland, Canada, and Sweden now-a-days use water-power both for industrial and illuminating purposes. In Sweden hydro-energy accounts for about 92 p.c. of the total output, the rest being generated by thermal plants. In regions where both coal and water-power are available, their comparative importance will depend upon the relative ease and cost of generating electricity. Italy, Spain, France and Germany use both water-power and coal advantageously.

"Certain geographical conditions are necessary before water-power can be utilised. They are—

- (i) abundant precipitation,
- (ii) fairly uniform discharge of water through streams resulting from (a) uniformly distributed precipitation or (b) re-

gulation of stream flowing through natural lakes, forested watershed or artificial storage behind dams, and

(iii) a slope or gradient which permits the water of a stream to be used and re-used for power development."

If a river with these ideal conditions is located near an area of dense population, the transmission of power becomes comparatively cheap. Generally the power is not transmitted beyond 300 miles from any station.

At present the development of water-power is almost confined to regions of high economic standing, of which two great areas stand out prominently. These are (i) Eastern U. S. A. with the adjacent parts of Canada, and (ii) Western and Central Europe. More than 60 per cent. of the world's output of hydro-electric power is produced in these areas.

The total output of all the hydro-electric stations in the world reached 86.9 million H. P. at the end of 1947.

WATER-POWER IN THE PRINCIPAL COUNTRIES, 1947

(in million Horse power)

U. S. A.	..	..	24.2	Italy	..	..	..	6.0
Canada	..	..	10.5	Japan	..	..	..	8.6

Other countries in decreasing order of importance are France, Sweden, Norway, Switzerland, Germany, Austria, Spain and U. S. S. R. There are however immense scope and possibilities of water-power in the various countries, now using hydel power.

The present ratio between water-power developed and water-power potential is as follows :

	p.c.		p.c.
Switzerland	.. .. 67	U. S. S. R.	.. .. 34
Germany	.. .. 54	Sweden	.. .. 27
Norway	.. .. 53	U. S. A.	.. .. 24
France	.. .. 42	India	.. .. 1
Canada	.. .. 34		

In the U. S. A., the Niagara Falls provide energy for a large number of hydro-electric installations. California, New England States and the Rocky Mountain States are all well

supplied with water-power. A remarkable development in water-power has also taken place in Canada, where "practically every large industrial centre is now served with it". The success of the pulp paper industry of Canada almost depends on it. The water-power resources are well distributed throughout the country. But during winter, when the rivers and streams of the north are ice-bound, utilisation is greatly hindered.

France offers unique opportunities for great development of hydro-electricity along the Alps, the Pyrenees and the Cevennes. The manufacturing industries and transport of the southern side can be best served by water-power. France is rich in iron-ore but deficient in coal. So it is possible that further development in water-power will take place in France in the near future for the utilisation of her iron-ore. Italy and Switzerland have developed water-power to a great extent. In spite of the absence of coal and oil, Switzerland is essentially a manufacturing country where water-power is utilised not only in factories but also in railways. In Norway and Sweden the streams are of major importance as sources of water-power. The abundant precipitation, snow-fields, glaciers and lakes in the highlands of Scandinavia, and the number of falls and rapids make these rivers the most important sources of water-power in Europe. Germany has certain important installations in the south and south-west but her resources of water-power are limited.

Japan is rich in water-power. The rugged surface of the islands, the swift flowing streams and the heavy, well distributed, uniform rainfall provide ideal conditions for developing hydro-electricity. Most of the larger power sites are located on the eastern and southern slopes of the mountains of Central Honshu. The first hydro-electric plant in Japan was established in 1892 in Kyoto on a stream flowing from Lake Biwa. Next to the U. S. A. and Canada, Japan was in 1939 the world's largest producer of hydro-electric power. Of the power produced, about 55 p.c. is consumed by industry.

There are fair prospects for the development of water-power in India. At present India is exploiting only 1 p.c. of her water-power potential. The great difficulty lies in the fact that in India rainfall is seasonal and, therefore, costly storage

works are indispensable. The Western Ghats of the Bombay Presidency, Kashmir, East Punjab and Mysore have developed water-power to a certain extent.

Manganese-Ore:—It is used for the hardening of iron and steel, in the manufacture of block enamel, in the chemical industry for the manufacture of bleaching powder and in electrical and glass industries. About 95 p.c. of manganese is consumed in the metallurgical, and 5 p.c. in the chemical industry.

Russia, India, South Africa, Cuba, Brazil, Gold Coast, Egypt and Czechoslovakia are the chief producers of manganese. Small deposits of manganese also occur in China, Hungary, Germany, Rumania, Spain and Malaya.

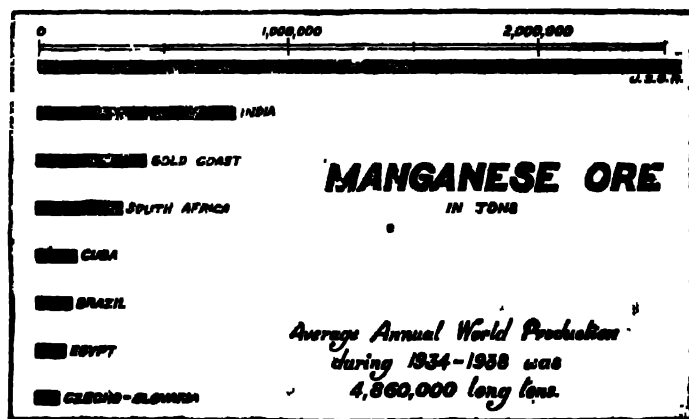


FIG. No. 31

It is estimated that for every ton of steel produced, 13 to 15 lbs. of manganese are required. As it happens, the world's important sources of high grade manganese ore, with the exception of Russia, are not located in those countries which are the chief steel producers. Seventy per cent of world's steel comes from U. S. A., U. K., Germany, France and Japan, and these countries produce only one percent manganese.

U. S. S. R. is the largest producer of manganese in the world. The two important manganese-producing areas in U. S. S. R. are the Georgian Republic and the Ukraine. In

Georgia the deposits are located at Tchiaturi in the province of Kutais. The Ukraine supplies manganese from Nikopol to the north of the Black Sea. In the Soviet Union, over 90 per cent of the manganese ore production is from the Nikopol and Tchiaturi districts. A very considerable tonnage of her ore is used for the domestic iron and steel industry. India, which ranked first till 1929 in the production of this ore, has deposits in Madras, C. P., Bihar, Orissa, Bombay and Mysore. Most of the Indian ores are hard lump ores very suitable for metallurgical purposes. The third great producer is Gold Coast, where further progress in the output of manganese will take place with the improvement of transport and labour conditions. Brazil has many manganese deposits, but the major production comes from the Lafayette district in Minas Geraes. The Brazilian ores are on the whole of lower grade than Indian ores.

South African deposits are near Postnasburg in Griqualand West, a part of Cape Province and are under the disadvantage of being far-off from the sea board.

Unlike most metals, a very large proportion of manganese required in metallurgy, is entirely lost once it is used; only a negligible amount can be recovered as a secondary metal.

Sulphur :—Sulphur is used in the manufacture of gunpowder and medicine, in vulcanising rubber and in drying fruits. Sulphuric acid is used in the manufacture of glass, matches, alum and many other things

Sulphur is not widely distributed. It is generally found in volcanic regions in combination with other mineral products, specially with iron, lead, zinc and antimony.

Production of sulphur is mainly confined to Japan, the U. S. A. and Spain.

CHIEF SULPHUR-PRODUCING COUNTRIES IN 1935.

(In millions of metric tons)

U. S. A.	..	1.9	Japan	..	..	0.7
Spain	..	0.9	Norway	..	..	0.4
Italy	..	0.7				

U. S. A. is the largest producer and exporter. It dominates the world market.

Salt :—Common salt is one of the necessities of life. It is found in the crust of the earth in a solid form known as rock salt. The sea is also one of the chief sources of this material, for it is obtained by evaporating sea water. In addition to the

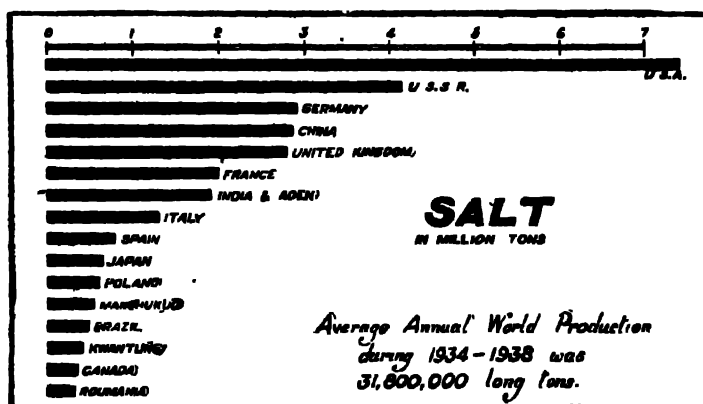


FIG. No. 32

universal use of salt in food, great quantities are used in packing and preserving fish, meat, hides and butter. Salt is used in the manufacture of soda, glass, bleaching powder, etc.

The production of salt is widely distributed. The principal countries are the U. S. A., British Isles, Germany, India, France, Japan, Austria, Italy and Spain.

About 60 per cent. of the Indian salt is obtained by evaporating sea water on the coasts of Bombay and Madras. Another source of salt is the Salt Range and the Kohat mines in Pakistan. The other two sources are brine salt from the Sambhar Lake in Rajputana and Salt brine condensed on the border of the Rann of Cutch.

Graphite :—It is widely used in the manufacture of crucibles, lubricants and lead pencils. Germany is the leading producer, where more than one-third of the world's total is found. The next important producer is Korea, though her production is much smaller than that of the former.

PRODUCTION OF GRAPHITE

(In 1000 metric tons)

		p.c.			p.c.
Germany	..	31	Madagascar	..	9
Korea	..	15	Ceylon	..	8
Austria	..	14	Italy	..	6
Czechoslovakia	..	12			

Asbestos :—It is a fibrous rock. Its fibres can withstand weather, water and fire. It is a non-conductor of both heat and electricity. This non-metallic mineral is used for making fire-proof safes and vaults. The fibre can be woven into curtain for roofs and floors.

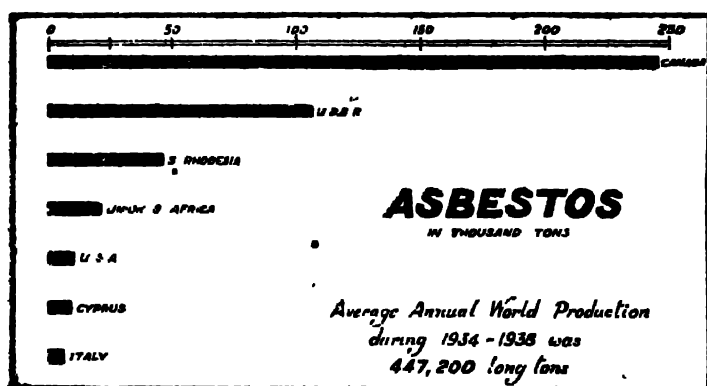


FIG. No. 33

The principal producers are Canada, U. S. A., Italy and South Africa. It is also found in India in the provinces of Bihar, Orissa, C. P. and Mysore.

Mica :—This mineral is chiefly used in electrical industries. Mica assumed a position of great importance during the last War in connection with the development of Wireless Telegraphy, aeronautical science and motor transport.

The chief producers are India, U. S. A., and South Africa.

India has for many years been the leading producer of sheet mica with an output of more than three-fifths of the world's total supply. Mica is found in Bihar, in the Nellore,

Salem and the Malabar districts of the Madras Presidency, Travancore, Ajmer-Merwara and other parts of Rajputana.

In the South Africa, the bulk of the output is from the Lomagundi district of Southern Rhodesia. Rich deposits also exist in the Transvaal, Cape Province and Natal. India and South Africa are the only exporters. Although the U. S. A. is the second largest producer of sheet mica, it is a rather poor second, with India at 75 p.c. of the total and the U. S. A. having only 10 p.c. In the U. S. A. mica is found in North Carolina and New Hampshire. It is also found in small quantities in Australia, France, Germany, Norway, Spain, Portugal, Russia, Japan, Canada and Argentina.

Precious Stones :—Search for precious stones is responsible to a large extent for stimulating human activity in trade and commerce. Diamond, ruby, sapphire, emerald and garnets are the chief precious stones scattered all over the globe. Most of the world's supply of diamond comes from Kimberly mines of South Africa. Diamonds are also found in Brazil, India, New South Wales and British Guiana.

CHIEF DIAMOND-PRODUCING COUNTRIES

(In millions of carat)

Belgian Congo	..	..	4.3	Angola	..	..	0.5
Gold Coast	..	..	1.3	South-West Africa	..	..	0.1
South Africa	..	..	0.7				

Ruby and sapphires are obtained chiefly from Ceylon, Burma and Siam. Emeralds are worked in Columbia, Siberia and New South Wales. Garnets occur in Saxony, Bohemia, Burma, Ceylon and the Urals. A little quantity of garnets is also raised on a commercial scale in Kodarma in Bihar (Indian Union).

Building Stones :—The most widely used of all building materials are limestone, traprock, marble, sandstone and slate. The heavy weight and cheap price do not generally permit the working of the building materials far from their markets. Clay is used for making bricks, tiles and pottery. Granite is found chiefly in England, Sweden, France and Canada. Italy supplies the finest marble of the world. Marble is also quarried in

England and the U. S. A. *Slate* mining has a long life, being hard, dense and insoluble in acids. It is chiefly used for roofing, black boards and bulletin boards. Other uses are for table tops, school slates, refrigerator shelves, etc. *Cement* is generally prepared by mixing clay with limestones. When cement is mixed with sand, gravel or crushed stone, the product is "concrete". Cement is extensively used in building roads, houses, streets and also in the construction of bridges, harbours and sea walls. There are few countries which do not possess limestone and clay for the manufacture of cement.

QUESTIONS

1. What are the most important uses of (a) Petroleum and (b) Platinum? Where are they found? —(Cal. Inter. 1927)
2. Compare coal and petroleum as sources of power and give their world distribution —(I I B 1944).
3. Name any four countries where water-power is principally used. Explain the special circumstances in each country favouring its use in preference to other forms of power. —(Cal. Inter. 1933).
4. Describe the eight principal British Coal-fields and their connection with the British manufactures. —(Cal. B. Com. 1923, 29, 31).
5. Name the countries from which the following minerals are exported—coal, iron and petroleum. —(Cal. B. Com. 1924).
6. Discuss the present distributions of steel industry in the Continent of Europe —(Cal. B. Com. 1927).
7. What are the principal steel exporting countries of the world? What are the principal consuming markets of steel? —(Cal. B. Com. 1934).
8. Give a brief account of the world distribution of coal, its various uses and bye-products. —(Cal. B. Com. 1949).
9. "In modern age coal and iron are more valuable than gold and diamond." Support or criticise the statement.
10. In what conditions may a coal mine be of greater value than a gold mine? Illustrate your answer with reference to the coal mines of (a) Great Britain, (b) Germany. —(Cal. Inter. 1927).
11. Briefly describe the world distribution of coal and iron with special reference to their economic importance. —(I P. S. 1932).
12. Discuss the distribution of non-ferrous metals in the British Empire with special reference to the sources of supply within India. —(Cal. B. Com. 1934).

13. "The discovery of minerals and precious metals has often given great impetus to the development of a country." Discuss this statement with special reference to North America and South Africa.

—(I. P. 1930)

14. Give an account of the world distribution and present production of mineral oil

—(Cal. Inter. 1940)

15. Write short notes on the use of any four of the following minerals, and also state the sources of their supply (a) Platinum, (b) Mica, (c) Zinc, (d) Copper, (e) Manganese and (f) Graphite.

—(Cal. Inter. 1938)

16. Name the most important producers of pig iron having surplus for export.

—(B. Com. 1938)

17. What are the liquid fuel producing countries?—(B. Com. 1940)

18. Where are the principal oil-fields of the world located? Explain the petroleum policy of any two of the following countries. Great Britain, France, Germany, U. S. S. R. and Italy.

—(Cal. M. Com. 1941)

19. Discuss the importance of mineral oil in modern warfare and industrial development and examine the resources in this respect of the leading world powers. —(The Indian Institute of Bankers, 1935).

20. What are the chief sources of industrial power? Examine the sources of the different parts of the British Empire with regard to each one of these.

—(I. I. B. 1945)

21. Give a geographical account of the principal oil-fields of the Near East bringing out the political and strategic significance of their situation.

—(Cal. B.A. 1942)

22. Name the important sources of supply of non-ferrous metals outside Europe. How and where are the supplies being consumed to-day?

—(Cal. B. Com. 1943)

23. Briefly describe the distribution of mineral oil outside the United States of America

—(Cal. Inter. 1944).

CHAPTER V

FISHING

Fishing is an important commercial industry. The sources of fish are—(a) Fresh water. and (b) Sea water. Fresh-water fish is found in rivers, lakes, ponds, etc. and it is important only for local consumption. Sea-water fish is important both for local areas and also for wider demand outside.

At present in many countries fishing is carried on with the help of drifters and trawlers. These vessels can go very far and are less dependent on weather ; so they can handle bigger catches. The average annual catch of sea fish is 13.5 million tons, of which Japan contributes 37 p.c. The production is about 18 p.c. in the British Empire.

Fish lives either in the sea bottom or at various depths not far below the surface. The methods of sea fishing are trawling and drifting. Inshore fishing is practised by trawling and deep sea fishing by drifting. The modern trawl net is dragged along the bottom of the sea at a rate of from two to six miles an hour, and finally drawn up into the trawler. Drifting is used for fish living at various depths not far below the surface. A steam drifter carries a crew of ten and about 90 nets. These nets are joined together by short ropes at the top and bottom.

The important fishing areas are found within a few hundred miles of the coast. They lie partly on the shore-belt of shallow water which covers the continental shelf or the submerged platform surrounding the continents. Others are located in the elevated parts of the sea floor at some distance from the shore, as the Dogger Bank in the North Sea. The shallowness of the water permits an abundant growth of small organisms which serve as food for many small animals of the sea. These small animals in turn are eaten up by fish. Again, the refuse materials deposited by rivers in the shallow water near the coast are excellent food for fish. Moreover, shallow water is the best spawning ground for fish.

Another particular feature of fishing is that *all the important grounds are confined to the temperate zone.* This is because

the warmth of the tropical water appears to favour the growth of innumerable kinds of fish, including poisonous and inedible varieties. But the physical conditions of the cooler waters of the temperate seas favour the individual abundance of fewer

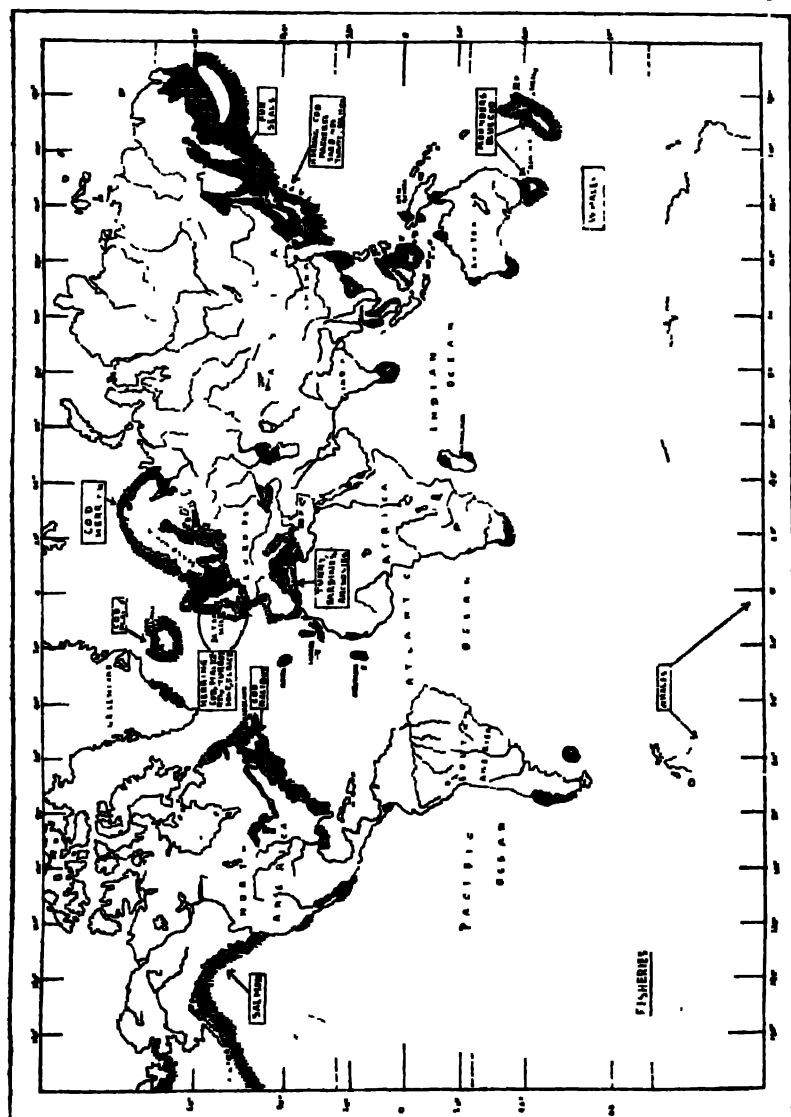


FIG. NO. 34. Distribution of the principal fishing grounds. The North Sea is the greatest fishing ground in the world.

species of fishes, many of which are valuable for human consumption.

It must be noted that trade in fish is easier in the temperate zone, for it is less difficult to preserve fish in warm weather.

There are four principal fishing grounds in the world: (i) The North Atlantic coast of Newfoundland, Maritime Canada and New England. (ii) The coast of North-West Europe. (iii) The coast of Japan. (iv) The North Pacific coast of the North America.

The fisheries of the north-eastern sides of North America are based on a rich combination of rivers, bays and shallow off-shore banks. From New England to Newfoundland, along the coast, herring and halibut are extensively found. Newfoundland and Labrador offer one of the best modern examples of people living from one resource—so great is the dependence upon fish. Two-thirds of the exports are fish products. Fishing is equally important for Nova Scotia. In the North Atlantic coast of North America the chief fishing centres are Boston, Halifax, St. John, Montreal and Portland (Maine).

The deep sea-fisheries are confined to the Grand Banks and the south of Newfoundland.

The North Sea is the largest fishing ground in the world. It is very shallow and abounds in fishing banks. It is surrounded by populous countries like Great Britain, Norway, Holland, Germany, France, Denmark and Belgium. Each of these countries takes an active part in the fishing industry.

Great Britain ranks second in fishing industry in the world, being surpassed only by Japan. It is the sixth largest industry in the U. K., where more than a million people are engaged in it. It is the leading country both for the import and export of fish. South-east England and the coastal towns of northern Scotland are the fishing centres. Wick, Thurso, Fraserburg, Peterhead and Aberdeen are the important fishing centres of Northern Scotland. In south-east England the important fishing centres are Yarmouth and Lowestoft. Here large quantities of herring are packed in salt and dried for export to the Continent. Fifty per cent. of the total catch of Britain is herring. Cod, mackerel, oyster and haddock are also caught. In the west coast of Britain, the lake fisheries are the most important. Fleetwood

and Milford are the leading ports. The greatest fish market is Billingsgate in the city of London. Although large quantities of fish are caught in the U. K., the country imports annually a considerable quantity.

Norway furnishes one of the finest examples of the close relations between geographical conditions and the fishing industry. Numerous harbours, invigorating climate and paucity of agricultural land have compelled the Norwegians to look to the sea as an instrument of their prosperity and progress. The important fishing grounds are confined to the south of the Lofoten islands where large numbers of cod and herring are caught. Cods are caught in Hammerfest and Tromsø. Trondheim and Bergen are the centres of herring fisheries. Norway supplies over 50 per cent. of the whale oil of the world. Fish accounts for one-third of the total value of export of Norway.

The continental-shelf around Japan is one of the major fishing grounds of the world. The fisheries are important in the cool seas around the north of Honshiu, Hokkaido and Karafuto. Many varieties of fish are found because of the cold and warm currents washing the west and the east coasts respectively.

Japan consumes fish more than any other country in the world, and the average annual value of Japan's fisheries is greater than that of any other country. Exports of fish to foreign countries are not proportionately large, for the major portion of the catches is consumed in the country. Her fishing industry employs about $1\frac{1}{2}$ million people. The per capita catches in the country are, however, small. Nearly 80 per cent. of the total catch of fish in Japan are obtained from the coast-line of Hokkaido, Korea, Kurile Islands and Sakhalin. Cod, herring, mackerel, salmon and crab are caught in the west coast, while in the east coast the chief catches are bonits, tunny and turtle. Culture pearls are produced now-a-days in Japan by breeding oysters and inserting in them grains of sand around which pearls are formed. Such pearls are suitable for cheap jewellery.

The fishing area on the North Pacific Coast of North America extends from the Gulf of Alaska to the North Californian Coast. Though the region is sparsely populated, the fishing industry has developed greatly.

Salmon fisheries are of the greatest value to Alaska which annually produces more than three-fifths of the enormous salmon catch of Pacific America.

The fiords and skerry coast of British Columbia make it an ideal fishing ground. The Fraser River, Skeena River and the water about Queen Charlotte island abound in salmon fish.

Herring, cod and halibut are also caught for export. Sardines are caught off the Californian Coast. The important fishing centres are Victoria, Sitka, Vancouver, Prince Rupert island, and Portland.

Fish is caught in many other regions. Along the north and eastern coasts of Australia, the coasts of East Indies and the Mediterranean coasts, fish is caught and consumed. River fish is important for local consumption. The rivers of Russia, Central Europe, North America, India (East) and China provide large quantities of fish.

Whale and seal are non-edible fish. Their chief commercial value lies in the oil obtained from their fat. Whale is generally found in the Arctic waters between Norway and Newfoundland. It is also caught in the Ross Sea in the Southern Hemisphere. Seal oil is used for soap-making. The skins are tanned and used for various kinds of leather goods. As the seals are found in the Arctic water, the hunting is really very dangerous. Newfoundland, Norway and Russia are the leading producers in respect of seal-hunting.

Mention may be made of pearl fisheries which are in Ceylon, the Persian Gulf, Sulu Archipelago, off new Guiana, off some parts of the Australian coast and amongst some of the Polyneesian islands. The value of a pearl depends upon its size, shape, colour, brightness and freedom from defects. The most valuable pearls are those which are perfectly round; the button-shaped ranks next, and then comes the pear-shaped pearls.

QUESTIONS

1. Examine the physical conditions that are the characteristics of the great fishing grounds. Illustrate your answer by examples.

—(Cal. Inter. 1933, B. Com. 1933).

2. What are the chief fishing grounds of the world?
—(Cal. Inter. 1944).
3. Write a short essay on the fishing industry of Japan.
4. "All fishing grounds are confined to the temperate zone"
Explain.
5. Describe the economic importance of shallow seas with regard to fishing.
—(Cal. Inter. 1939, 41).
6. Give an account of the principal fisheries of the world. Which of these are of special importance to Great Britain? (I I B. 1931).

CHAPTER VI

PASTORAL AND ANIMAL INDUSTRIES

Animals are domesticated for food, transport, clothing and also for raw materials other than those for clothing. The important domestic animals are cattle, sheep, pig, house, ass, camel, goat and elephant. Since animals require a large area in which to roam and feed, the great stock-raising areas of the world are found in those countries where extensive grasslands exist. In densely populated countries or in mountainous areas, it is difficult to develop such occupations. There is little room, therefore, in Belgium, Italy and Japan for pastoral industry.

Animals supply food in the shape of meat and dairy produce. Meat is not an essential food. A large portion of the world's population does not take meat. Meat animals are cattle, sheep, goats and pigs. Formerly meat animals were raised near the markets, but to-day, thanks to the introduction of refrigeration and improved means of communication, markets which are thousands of miles away from the pasture lands can be supplied with fresh meat. Meat can also be preserved in airtight vessels. U. S. A., South America and Australia have developed to a great extent the meat-canning industry. Argentina holds the leading position in the meat trade of the world. The conditions favourable to Argentina are its vast grassy level plain and the nearness of the cattle lands to the sea board.

Beef cattle are reared in the rich grasses of Brazil, Argentina, Uruguay and Paraguay, from where chilled meat and tinned meat are exported. The great American Plains from Texas to Alberta raise beef cattle in large numbers.

Sheep are found practically in all the continents and are bred for wool and mutton. Mutton sheep are best raised in England. Large quantities of mutton come from Australia, New Zealand, South Africa and Uruguay.

Pigs are found in every part of the habitable globe as they are easily adapted to a new environment. They are easily

domesticated, and are reared in large numbers in the U. S. A., the countries of Western Europe, Argentina and Brazil. U. S. A. is a large producer of pigs. The Maize districts of Iowa, Illinois, Indiana, Ohio, Kansas, and Nebraska raise more than one-half of the U. S. A.'s total supply. Chicago, Kansas city, Omaha and Milwaukee are the main centres for *pork packing and bacon curing*. Lard (fat from pigs) is also exported from the U. S. A.

Germany, Holland, Denmark, Spain and Portugal are other important pig-raising areas.

LEADING PIG-PRODUCING COUNTRIES

(000 omitted)

Countries	Number	Countries	Number
China ..	95,000	U. S. S. R. ..	12,068
U. S. A. ..	37,007	France ..	6,488
Germany ..	23,890	Poland ..	5,753
Brazil ..	21,615	Denmark ..	4,407

Dairying is an industry which depends entirely on climate. Dairying has developed in lands of moderate coolness where

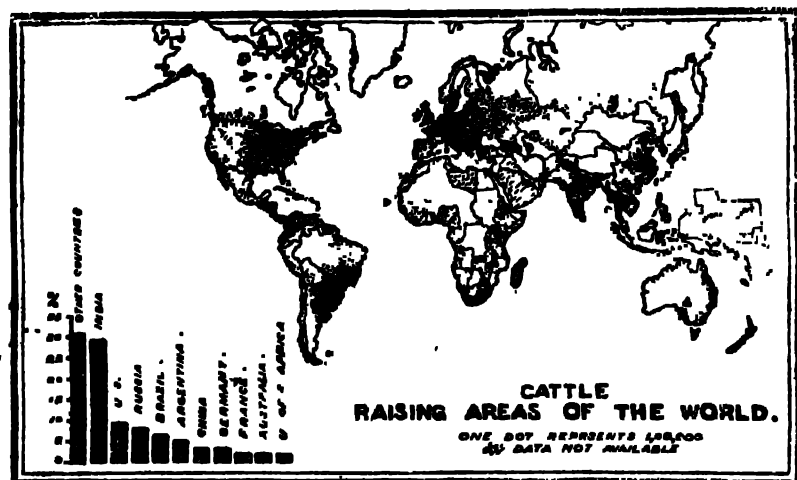


FIG. No. 35

rainfall is sufficient for the heavy growth of grass and other forage required by cows. U. S. A. and North-Western Europe

are the two important areas devoted to dairying. Milk, butter and cheese are the main produce. In the U. S. A. the leading areas are Wisconsin and Illinois. More than 20 millions of cows are reared in the dairy farms of the U. S. A.

In Europe, the low countries of the north-western section have rich pastures. Denmark is the pre-eminent dairy farming country in the world. Denmark's success in dairying is due to co-operative societies. At present there are nearly 9000 societies in the country. Eighty per cent. milk is used for making butter, ten per cent. for cheese and condensed milk and the rest is consumed locally. The dairy produce amounts to 76 per cent. of the value of Danish exports. Holland is also famous for dairy produce. The other countries are Switzerland, France, Sweden, Ireland, Germany and Finland.

New Zealand is one of the leading dairy countries in the British Empire. The Government always takes active interest in farming. The butter and cheese of New Zealand have wide markets.

CATTLE IN SOME LEADING COUNTRIES

(000 omitted)

India (including Pakis- tan) .. .	200,353	China	23,000
U. S. A. .. .	60,667	Germany	19,139
Brazil .. .	47,492	France	15,643
U. S. S. R. .. .	38,400	Australia .. .	12,783
Argentina .. .	32,313	South Africa ..	10,751
		Mexico .. .	10,083

Although India leads in cattle production, her dairying and meat industry are insignificant. Denmark, Ireland and France are specially noted for butter. The leading producers and exporters of cheese are Canada, Italy and Holland.

In recent years a considerable development has taken place in poultry-keeping in the U. S. A., Denmark and Russia. Fowls, turkeys, ducks and geese are domesticated and used for meat and eggs.

Wool is an important animal product and holds a high place amongst textile materials. Camel, sheep and goat supply nearly 90 per cent. of the world's total wool.

So far as material for clothing is concerned, no animal can compete with sheep. New Zealand, Australia, South Africa, Uruguay, India and the U.S.S.R. are the large producers of sheep.

SHEEP-REARING COUNTRIES

(000 omitted)

Australia	..	..	114,000	India		
U. S. A.	..	..	49,766	(including Pakistan)	43,581	.
				New Zealand	..	27,756
U. S. S. R.	..	..	45,700	China	..	26,000
Argentina	..	..	44,440	U. K.	..	25,811
				<i>Estimated World</i>		
South Africa	..	.	48,700	<i>Supply</i>	.	742,200

Sheep yielding best wool require a dry, warm, temperate climate and limestone soil. The best wool-producing sheep is 'Merino'. The great wool-producing areas are found in the thinly populated grass-lands. Australia is the biggest wool producer and supplies more than one-fourth of the world's total wool production. The main sheep-belt lies on the leeward side of the Eastern Highlands, stretching from the Murray basin northward to Central Queensland. New South Wales has more than half of Australia's sheep. The east coast lands have damp climate and therefore sheep are few there. Other areas in Australia are Queensland (20 p.c.), Victoria (15 p.c.) and west Australia (10 p.c.). The important wool-collecting centres are Sydney, Albury, Melbourne, Geelong, Ballarat and Brisbane.

Next in degree of importance are the U. S. A., Argentina and New Zealand. These four countries supply more than 50 per cent. of the world's total wool. In New Zealand the dry slopes and plains on the coastal sides of the South Islands supply large flocks of sheep.

CHIEF WOOL-PRODUCING COUNTRIES IN 1938

IN METRIC TONS (000 OMITTED)

(One metric ton equals 1967 cwt)

Australia	..	..	515	South Africa	..	..	125
U. S. A.	..	..	210	U. S. S. R.	..	(?)	160
Argentina	..	..	180	India	..	..	45
New Zealand	..	..	145				

The world production of wool in 1948 was estimated at 3,830 million lbs. The share of each continent in the production was as follows: North America 312.5 million lbs, Asia 332.5 million lbs, Africa 278 million lbs and South America 786.8 million lbs.

The present world consumption of wool has gone up by 10 to 15 per cent above the pre-war years and therefore the scarcity of fine grade wool has become apparent. Research has been undertaken in New Zealand, Australia, South Africa and U.S.A. to study the medium and coarse wool fibre with a view to increasing their usefulness.

Camel gives hair from its mane and hump. Camel-wool is important in Iran, Arabia, Asia Minor, North Africa and Central Asia. Other important wool-producing animals are the *Angora goat*, the *Tibetan goat*, the *Alpaca*, the *Llama* and the camel. The Angora goat from South Africa supplies 'mohair' wool. The Tibetan a native of Tibet, Kashmir and Southern China is important for its soft wool which is made into 'Kashmere' shawls. Peru and Bolivia rear the Alpaca from which the wool 'alpaca' is obtained. Alpaca is used for linings, braids and light cloth. Llama, a native of Peru, yields a wool equal in quality to Alpaca.

The by-products of the animal industry are of great importance. These are bones, horn, hide, fat, hoof, etc. Bones are useful for making buttons, combs, toilet articles and the like. Leather is of great importance to men. Not only boots and shoes are made of it, but also bags, suit-cases, trunks, harnesses, chairs, machine-belts, automobile seats, cases for guns and sundry other things. The demand for leather is increasing. The most valuable supply of leather materials comes from cattle, horses, sheep and goats. Argentina, Uruguay, Central America, Russia, Canada and South Africa supply cattle-hides. Germany and the U. S. A. are the leaders in tanning industry (cattle-hide). More than 70 per cent. of the U. S. A.'s leather production is accounted for by cattle-hides. Goat-skins are important in India, China, Spain and Brazil.

These animal products are mostly raised in those areas where the meat packing industry is important. Furs are

obtained from fox, mink, squirrel and ermine of the cool temperate lands.

Animals are of great use for transportation and draft. As beasts of burden elephants, horses and camels are doing great service to man,—without them human beings would hardly have progressed. In the desert areas camels are the beasts of burden and the only means of transport.

Although with the development of mechanical transportation the importance of draft animals has decreased, there are still many countries where animals are the only transporting agents. In the extreme North or South, reindeer and dogs are not only the beasts of burden but also the only means of transport. In India, which is essentially an agricultural country, cattle are employed in the fields. Even in Europe and America, where agriculture is practised on scientific methods, horses are useful in cultivation.

QUESTIONS

1 Describe the industries of (i) Sheep rearing and (ii) Dairy farming as they are carried on in the countries of the British Empire

—(I. P. S. 1932).

2. What are the conditions of success in the production of commercial wool? Illustrate your answer with reference to countries of the British Empire.

—(I P S. 1931)

3. Describe the distribution of sheep in North America, Australia, and New Zealand. Under what conditions does this animal thrive best?

—(Cal. B Com 1929).

CHAPTER VII

FOREST AND LUMBER INDUSTRIES

Nearly one-fourth of the land surface of the earth is covered with forests. Their distribution is essentially climatic.

Continents	of acres in million	Percentage of forest to total
Asia	2096	22
South America ..	2093	44
North America ..	1444	27
Africa	797	11
Europe	774	31
Australia .. .	283	15

Forests have direct and indirect utilities.

The indirect utilities are the following :—(i) Forests render the climate more equable and contribute to increase rainfall. (ii) They increase the fertility of the soil (iii) They decrease the velocity of the air current.

The direct utilities of forests relate chiefly to their produce, such as timber and firewood, and the raw materials they afford for various industries. Timber is used for making boxes, crating, house-building materials, furniture, masts and decks of ships, etc. The pulp produced from wood is the most important raw material for the manufacture of paper. The other uses of timber are distillation, dye stuffs, fence posts, etc. Various other forest products are rubber, gutta-percha, quinine, tar, turpentine, resin, cork, etc. Another important use of forests is that they provide scope for the grazing of cattle.

Forests are a source of revenue to the State. They also afford to the villagers who live near-by a ready supply of materials for house-building, fuel, and minor forest products which add to the comforts of their lives.

There are three main classes of forests : (i) Coniferous soft wood, (ii) Temperate hard wood or Deciduous, (iii) Tropical hard woods or Evergreen.

Coniferous soft wood consists of pine, firs, spruces, larches, cypresses and junipers. One-half of all the world's wood is to-day cut from the coniferous forests which are, most widespread in cold, snowy regions like Siberia and Canada. The slopes of the Himalayas at an altitude of 5000 to 7000 ft. around Kashmir, certain remote mountains in the Western China near the Tibetan border, the Andean slopes of Southern Chile and New Zealand have many coniferous trees. The pine is the most important soft wood and is the chief timber for commercial purposes. It is used for the masts and decks of ships, for the manufacture of materials for houses, for the making of packing cases and boxes and in the manufacture of matches. It is obtained mostly from the forests of Canada, Norway, and Sweden ; it is also cut in the east of the U. S. A., in Tasmania and in New Zealand.

The temperate hard wood or Deciduous wood like oak, birch, beech, maple, ash, walnut and elm are mostly used in the manufacture of furniture. In the world as a whole, the temperate hard wood furnishes 40 per cent. of the total cut, and is found best in the Alps, the Pyrenees, Central Russia, the middle region of Siberia, Japan, the Appalachian region in the U. S. A., Patagonia and Southern Chile.

Tropical hard wood or evergreen forests include teak mahogany, ebony, rose wood and dye wood. The three great regions are the forests of the Amazon, known as Selvas in South America, the forests of the Congo basin and the Upper Guinea Coast-lands of Africa, and the forests of the East Indies. The tropical forests contain cabinet timber and dye woods. The chief varieties used for making the best furniture are mahogany, ebony and rose wood which are mainly found in Central America and West Indies. The best quality mahogany is found in Haiti, and the inferior types come from Cuba, Jamaica and Mexico.

EUROPE: Nearly one-third of Europe is forest-covered. The continent produces 10 per cent. of the world's total supply of forests. *Scandinavia, Finland, the Baltic States and Northern Russia* are covered with coniferous forests. The lumbering and timber industries in these countries have developed to a great extent because rivers provide easy transport and cheap mechanical power.

Sweden is the most important timber-producing country in Europe. Window frames, paper, matches, wood pulp and plywood form nearly 40 per cent. of Swedish exports. In *Norway* the forests cover nearly one-fourth of the total area. The forest products constitute about one-third of the total exports. Norway does not supply much wood to other countries but uses it as the basis of manufacturing industries, such as the manufacture of pulp, newsprint, cellulose, cardboard, matches and paper. As the coast of Norway is ice-free throughout the year, shipping is least inconvenient.

Russia contains more than one-third of the total forest-land of the world. There are vast resources of pine, fir, larch and spruce which are used for timber, paper making and the manufacture of cellulose. The magnitude of the industry can be judged from the fact that while Soviet Russia produced 112 millions of metric tons of timber in 1935, Canada, the second largest producer, raised only 48 millions of metric tons.

NORTH AMERICA: Nearly twenty per cent. of the world's forest areas are confined to North America. *Canada* is known as "*the Empire's storehouse of soft wood supplies*". Her output of timber is greater than the combined production of the next five leading producer countries. British Columbia, Northern Prairie provinces, Ontario, Quebec and New Brunswick have developed lumber industry. The Canadian forest industries, in order to offset depletion of the forest lands, have adopted modern planning methods, and undertaken reforestation schemes. There are two important belts of soft wood in the U. S. A. The first, in the east, includes New England, Appalachian Highlands, and the Atlantic coastal plain; the other, on the west, is located in the Rocky mountains and the Pacific slopes. The forests of the U. S. A. cover nearly 30 per cent. of the total area.

ASIA: Asia possesses 28 per cent. of the world's forest. *Siberia* is covered with coniferous forests, but the difficulties of working them as a result of climate and inadequate means of communication are responsible for the slow development of lumbering industry there. Japan, China and India are also liberally gifted with forests.

India is very rich in forests, which cover more than one-fifth of the total area of the country.

Broadly speaking, there are four types of forests in India :

- (i) Deciduous forests, extending over large areas in the Sub-Himalayan tract and Peninsular India.
- (ii) Evergreen forests, occurring in those areas where the rainfall is heavy. Such regions are the west coast of the Peninsula and the eastern Sub-Himalayan tract.
- (iii) Hill forests, varying according to elevation and rainfall. In the Eastern Himalayas and Assam the forests are full of oak and magnolia, while in Assam and Burma pine trees grow abundantly at an elevation of 3,000 to 6,000 ft.
- (iv) Littoral forests i.e., forests on the sea coast, the most characteristic trees of which belong to the mangrove family.

It will be seen that almost all the forests in India are located in the hills.

Pakistan has arid country forests, extending over Sind, part of Baluchistan and the south of the West Punjab. The most important tree is the babul.

One alarming feature to be noticed in lumber industry of the world is that the consumption is greater than the growth in every country. "At present the amount of timber cut annually in the world is on an average 30 per cent. greater than the growth of young trees." In Europe and America, the conservation of forest is practised, that is to say, only mature trees are cut: young and seed trees are allowed to grow. In *Canada*, the policy of the Government is to encourage the "cultivation" of timber for the obvious fact that saw-mills and paper-mills cannot rely on "forest-trees".

Although the consumption exceeds the growth, it is assuring to note that there are great reserves in South America, Africa, South-Eastern Asia and the East Indies. In these areas, the forests grow rapidly because of the climatic conditions. But the poor transportation facilities in these areas have made the exploitation of the forest products somewhat slow and halting.

The world production of wood has been definitely on the increase since the end of World war II. In 1946, the world

production of wood was estimated at 1410 million cubic metrics of round wood, weighing about 1000 million metric tons. The value of this production was 7100 million dollars.* The importance of wood in world economy can be appreciated from the fact that this aggregate value is more than three times the value of the annual output of coal.

QUESTIONS

1. What are the principal forest regions of the tropical zone? Describe their commercial importance.

2. Describe the forest resources of India and show how far they have been commercially exploited.

3. What are the sources of British timber? Describe the timber-producing areas in the British Empire.

4. Describe the forest regions of the temperate zone. Discuss in this connection the importance of forest-products of Scandinavia and the Baltic States.

5. On a sketch map of India, show the regions with important timber resources. How are these utilised at present? Discuss the prospects of increasing exports of Indian timber to the world's markets.

—(Cal. B. Com. 1940).

* Year book of Forest products statistics by U. N. Food and Agricultural Organisation.

CHAPTER VIII

TRANSPORT

Commerce is defined as the sum-total of those activities which are engaged in the removal of hindrances connected with persons, places and time in the exchange of commodities. The hindrances connected with persons and time are removed by traders, while those connected with places are removed by means of transport.

The transportation system was at first very simple. Man and animal were the only means of transport. At present, man calls to his service water, wind, steam and electricity for carrying goods not only in the local areas but also over long distances. A journey which required months a hundred years ago can be completed to-day in a few days. The continuous development of air-service has further shortened the distance between different places. Indeed, we may say that the world has become smaller than what it was fifty years ago.

Generally speaking, *transport means movement of goods from one place to another*. Transportation is an important factor in production and distribution, and as such it may be considered as the life-blood of commerce. The growth of domestic and foreign trade is dependent on it. There is no civilised country which is not dependent on other regions for food or raw materials. All the countries of Western Europe look to the Americas and Asia for supplies of food and raw materials. Canada and Argentina would not have raised wheat had there been no provision for rapid and cheap conveyance by land and water, for these two countries cultivate wheat mainly for European markets.

Commodities are manufactured on a large scale, because the problem of distance has been largely solved. Transportation has made possible the colonisation of many new lands. The Americas, Australia, South Africa and New Zealand have been colonised by the European peoples.

KINDS OF TRANSPORTATION SYSTEMS

Land	Water	Air
1. Man	1. Rivers	(a) Aircrafts heavier than air
2. Animal	2. Canals	(b) Aircrafts lighter than air
3. Roads	3. Lakes	
4. Railways	4. Oceans	

The modes of transport are different in different countries, because of relief and climate. In a few countries all the systems are present, while in others only two or three types are employed. In the Tundra Region dogs and reindeer are employed for drawing wheelless vehicles on snow, while camels are the only source of transport in the deserts.

In many countries man himself is the only model of transport. In Central Africa, China and Japan beasts of burden are few and men are employed to carry loads for short distances. The relief and climate of Africa from the Sudan to the Zambesi are such that it is very difficult to construct roads and railways. Negro porters carry ivory, rubber, palm-nuts and other products of the Savannahs. Even in areas where beasts of burden are available, it may not be possible for men to use them. The slopes of the mountains may be too steep for animals, as in some parts of China, Tibet and Chile, or harmful insects may prevent the use of transport animals as in Central Africa, the Middle Amazon basin, etc. In such regions heavy loads are moved by coolies. It should be noted that employment of human labour for carrying loads for long or short distances is found only in the background countries. This mode of transport is so expensive that the cost of carrying goods to a distance of 150 miles is three times the freight usually charged for a voyage of 8000 miles.

Man employs many animals in his service and also employs them as his beasts of burden. The horse is the common transporting animal in the temperate lands. In the hot deserts of the Old World, camels carry heavy loads and can travel more than thirty miles a day. Elephants are employed in India and Burma and parts of Africa to carry loads and they render valuable service in the teak forest of tropical Asia. The Yak is the beast

of burden in the mountainous regions of Northern India and Tibet, and the mule is serviceable in the mountain areas near the Mediterranean Sea and Mexico. In the north-west of Canada and in Siberia, sledges are drawn by hardy dogs over the frozen snow. The reindeer has been introduced in Alaska and parts of Canada.

The most economical way of using the beasts of burden is with wheeled carts which, of course, require some sort of road. A nation's natural resources can best be developed under a system of good roads. Poor roads permit limited intercourse and hinder exchange, and as such keep a country backward.

Roads are a great feature of transport in every commercial country. They are always very useful in the collection and distribution of goods. Wheeled vehicles which use roads may be drawn by animals or mechanical power. Motor vehicles are swift and sure, and have been introduced in every civilised country. When the roads are levelled and macadamised, motor vehicles can be employed with full advantage. Transport operations are now performed by automobiles in the deserts of Sahara and Arabia.

ADVANTAGES OF ROAD TRANSPORT

1. Road transport yields service more easily than the railways or the waterways, because on the roads no transshipment is necessary.

2. The rural areas can best be served by road transport because railways cannot give efficient service to these areas as the traffic is small. Big cities like Calcutta, Bombay, etc., generally collect the produce of the adjoining rural areas by road transport.

Countries	Motor-road-mileage (1 km equals $\frac{5}{8}$ of a mile)	Number of motor vehicles (in millions)
U. S. A. ..	3,000,000 miles	30.1
France ..	650,000 km.	2.2
Great Britain	177,000 miles	2.6
Germany ..	274,000 km.	1.9
Canada ..	394,300 miles	1.4

U. S. A. possesses nearly one-third of the total road mileage of the world. There are more than 3,000,000 miles of

roads in the country out of a world-total of 9,225,000 miles. Motor traffic in the U. S. A. is the heaviest in the world. It has more than 75 per cent. of the motor vehicles of the world (one vehicle for every four persons).

Road conditions are not favourable to the development of motor transport in Canada. It has a little above 390,000 miles of roads of which nearly 40 per cent. are earth-roads. These earth-roads are closed to traffic during the long winter. The province of Ontario has the largest road mileage and possesses nearly 50 per cent. of Canada's motor vehicles.

India has a little over 300,000 miles of roads of which only 75,000 miles are motorable. Considering the size and the population of the country, the road mileage is very poor indeed. Good road communication is essential in a country like India which is predominantly agricultural. It is now felt that to help the country to continue the development of its potential wealth, roads must be opened and improved.

The other two modes of land transport are tramways and railways. Trams are run by electricity and are used in and near big cities. For long distance tram cars are not suitable, and hence railways are universally used. Speed and capacity for carrying heavy goods account for the great development of railways throughout the world.

Railway is the most important means of inland transport. It has opened up new countries for settlement, which otherwise would have remained sparsely populated. Canada and Siberia are countries where railways have opened up new lands.

The construction of railways is influenced by physical factors like climate and topography. Climate has a considerable influence on railways. Snow may block passes and impede railways, and heavy rainfall may undermine embankments. In the Arctic Zone it is almost impossible to construct railways as the land is always covered with ice and snow. The heavy rainfall of the equatorial region makes the soil unsuitable for the construction of railroads.

The relief of a country directs the course of railways. Mountain-barriers also exclude or deflect railways. It is easy in plains to construct railways, but the difficulty in mountainous lands is sometimes insuperable. In order to cross the great

highlands, tunnels are sometimes used. Deep cuttings and long tunnels are avoided wherever possible, because of their high cost.

LENGTH OF RAILWAYS IN THE PRINCIPAL COUNTRIES

U. S. A. (1942)	..	242,744	British Isles (1937)	..	22,915
U. S. S. R. (1940)	..	60,000	Japan (1937)	..	15,254
Germany (1939)	..	42,299	Poland (1937)	..	12,700
Canada (1941)	..	56,700	Union of S. Africa		
India (1940)*	..	41,156	(1943)	..	13,244
Australia (1942)	..	27,962	Italy (1938)	..	14,550
Argentina (1943)	..	26,249	Chile	..	5,200
France (1938)	..	26,427			
Brazil (1943)	..	24,000			3,189

RAIL VS. MECHANICAL ROAD TRANSPORT

Roads are very important even in this age of railways, for they are the feeders of railroads. Great Britain, Germany, France and the U. S. A. have excellent roads. At present motor vehicles are competing with rails in many countries. For rapid and short distance service, motor vehicles are very convenient. In the case of railways, much delay is caused by terminal services, shunting operations and collection and delivery of goods. But over long distances railways offer rapid, economical and reliable service, especially in the case of bulky and heavy goods. Road transport is more flexible than railway transport, because motor vehicles, not being dependent on railway lines, can go wherever there are roads. Rural areas can be best served by roads; railway-operations are generally unprofitable in these areas as the volume of traffic is not large.

SOME IMPORTANT TRANS-CONTINENTAL RAILWAYS

1. The Trans-Siberian Railway.
2. The Trans-Caspian Railway.
3. The Cape-Gairo Route.
4. The Canadian Pacific Railway.
5. The Chile-Argentine Railway.

* Pakistan has 1,600 miles of railway lines.

The Trans-Siberian Railway connects Russia with the Far East. It runs from Moscow to Vladivostok on the Pacific, the distance being 5,400 miles. The settlement of Central and Eastern Siberia is largely due to this railway system.* It has additional value as an alternative route between Europe and Asia on the Pacific for passengers and mails. The line was constructed by the Czarist Government for the purpose of facilitating the work of administration in Asiatic Russia. It is a single track system. From Moscow the line goes to Omsk after crossing the Urals and traversing the agricultural lands of Northern-Steppe provinces where wheat-fields are prominent. From Omsk the line goes directly eastward, crosses the Obi and



FIG. No. 36 The Trans-Siberian Railway. Note that Moscow is connected with Leningrad. From Omsk a branch line has gone as far as Tashkent.

the Yenisei and soon reaches Irkutsk and lake Baikal. The distance between Lake Baikal and Moscow is 3,420 miles. The line then goes from Lake Baikal to the Amur valley and passes through Manchuria and finally reaches Vladivostok. In Manchuria, a southern branch has been opened at Harbin which

* This railway is regarded in the Soviet Union more as a political or strategic link than as a trade route.

connects Port Arthur *via* Mukden. Mukden is linked up with Peiping by rail.

The Trans-Caspian Railway connects Central Asia with European Russia. *It is also a part of a possible railway route between Europe and India.* The line runs from Krasnovodsk, on the Caspian Sea, to the heart of the cotton-growing region of Turkestan, throwing off a branch of the Afghan frontier from Merv to Kushk. Krasnovodsk is connected with Moscow *via* Tashkent.

The Canadian-Pacific Railway was built during the years 1882—86. The length of the line is 3,500 miles. This line connects the Atlantic coast of Canada with its Pacific coast. This line shortens the journey from Liverpool to China and



FIG. NO. 37. The Canadian Pacific Railway. Note how the Canadian system is connected with the U. S. A. railways at Chicago.

Japan by 1,200 miles. The line runs from Halifax and St. Johns to Montreal. From Montreal it goes to Winnipeg, the great wheat centre of Canada. The line crosses the plains from Winnipeg *via* Regina and reaches Medicine Hat in the Rockies. Leaving Medicine Hat, it goes through Kicking-Horse-Pass, and ends in Vancouver.

This railway system has played a very important part in the political and economic life of the Dominion. Geographical conditions like distance and climate placed considerable difficulties in the way of colonisation in Canada. Waterways rendered inestimable service no doubt, but they were closed to traffic during the winter months. The Canadian-Pacific Railway now permits the scattered population of the Dominion to maintain constant intercourse.

The Chile-Argentine Railway of South America connects Buenos-Aires with Valparaiso ; the distance is nearly 900 miles. This route was opened for traffic in 1910. As there is a change of gauge both at Mendoza on the Argentine side and at Los Andes on the Chilean, the route is useful only for the carriage of passengers and mails. Of the four trans-continental lines in South America none is more important commercially than the Chile-Argentine line. The interchange of products between the eastern and western zones of the Continent is small.

Cape-to-Cairo Route : The distance from Cape to Cairo is 9,000 miles, which is traversed by rail, river, lake and road. It was a scheme of Cecil Rhodes to connect the Cape with Cairo by an all-British railway system ; but the scheme could not be worked out. A railway line from Cape Town goes upto the border of Belgian Congo *via* Bulaways and Elizabethville. From Elizabethville, the capital of Kantanga, a river-cum-caravan route proceeds to Lake Victoria, from where a motor road runs to the Nile Gorge. From here steamers maintain regular service to Khartoum. From Khartoum a railway line goes to Wadi Haifa, thence by river-transport Shellal is approached. From Shellal a train runs to Cairo.

Water Transport

Water transport may be inland and oceanic. Inland waterways include navigable rivers and canals, while under ocean transport come seas, oceans and sea canals. Water transport

is cheaper than land transport because waterways provide ready-made highways, and the right to navigate them is often free. But water transport is attended with a great disadvantage: it is slow and uncertain.

Rivers are the most important highways of commerce. A river in order to be useful for navigation must be deep and free from ice. Swift currents and falls make a river dangerous for navigation. Rivers should have a constant flow of water. The importance of rivers increases when they flow towards ice-free oceans or seas through regions of rich products and dense population. The rivers flowing towards the Arctic Oceans or inland seas have limited and restricted traffic.

River systems of Europe, Asia, Africa, Australia, North America and South America

Europe has a large number of rivers suitable for navigation. Among the European countries *Germany is exceptionally fortunate in having large navigable rivers.* What Germany lacks

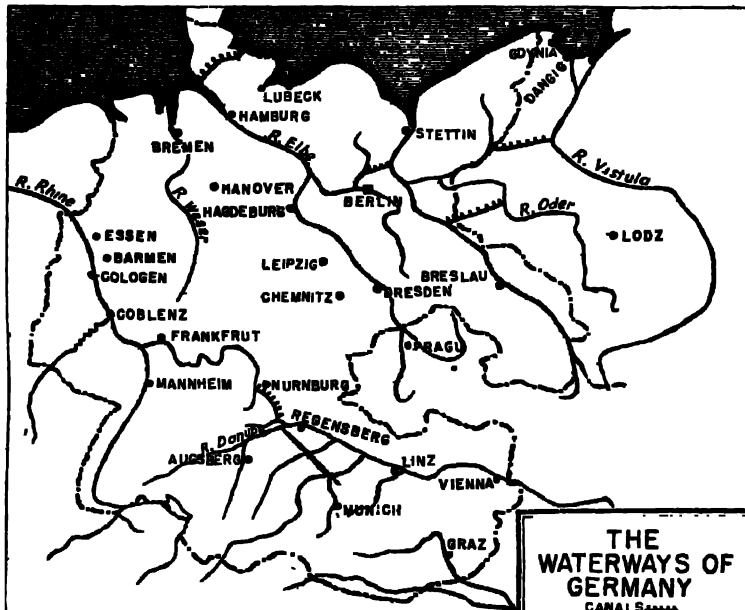


FIG. NO. 38. The waterways of Germany Note how the rivers are flowing diagonally from south-east to north-west.

in coast-line, she makes up by her large navigable rivers. And probably in no other country are such big manufacturing and industrial towns to be found on river banks as in Germany. The Rhine, the largest river in Germany and the most important in Europe, has perhaps the most voluminous traffic in the world. Sea-going steamers now land their goods at the river port of Cologne. It is navigable by steamer as far as Main, Mannheim and Strassburg. The other big rivers of Germany are the Weser, Elbe and Oder. The Elbe is not only navigable within the German boundary but it is also easily navigable from Prague to other parts of Czechoslovakia. There are important towns on the Elbe, such as Dresden, Magdeburg and Hamburg. The Oder is also navigable and flows through the rich mining and manufacturing regions of Silesia. Breslau and Frankfurt are the two important towns on the Oder.

The rivers of Germany mostly flow diagonally from south-east to north-west. They are all connected with one another by canals. The Weser is connected with the Elbe at two points—Magdeburg and Hamburg. The Hansa Canal gives direct water communication from the Ruhr Coal-fields to Hamburg. Ludwigs canal connects the Danube with the Maine, a tributary of the Rhine.

France is not far behind Germany in the extent and utility of inland water-ways. To secure the maximum benefit through inland communication by water as far as practicable, the most important rivers have been joined with one another. The rivers are navigable except in their upper courses. The Rhone, which is 500 miles long, is of little importance, but the Saone is a first-class water-way. The Seine with the tributaries, the Yonne, Marne and Oise, rises in the hills of Burgundy and flows northward to the English Channel through the Paris region. The river is navigable and provides valuable traffic. The Loire, which flows to the Bay of Biscay, is navigable as a commercial waterway. The Dordogne and Garonne are navigable and have important traffic.

There are many large navigable rivers in Russia. These are the Dvina, Volga, Don, Dnieper and Dneister. They mostly flow either to the Arctic Ocean or to the inland seas like the Caspian, the Baltic or the Black Sea. This is a serious defect because the north is ice-bound during winter and closed to navigation,

and the inland seas have no outlet. In spite of such defects the Russian rivers are very important for domestic and foreign trade. The Volga is the second important river in Europe. It binds the trade of the south with that of the north in Russia. But as it flows to the Caspian Sea—a land-locked sea, its navigation is important only between local centres along its course.

Australia is deficient in waterways. Her river-system consists of small streams flowing from the highlands to the coast. Her eastern rivers are navigable for short distances during the wet seasons only. The two most important rivers are the Murray and the Darling. The Murray rises in the Australian Alps and is fed by the melting snow as well as by the copious rains of that part. The Murray and its tributaries are very important for irrigation, which consists in damming up the rivers at convenient places and holding back the waters for use in channels which lead to the fields.

In the St. Lawrence and the Great Lakes, *Canada has the most magnificent inland waterways in the world.* In addition to this wonderful system, there are many large lakes and thousands of miles of navigable rivers. There are three chief hindrances to navigation on the St. Lawrence and the Lake system: (1) frequent fogs near the mouth, (2) ice in winter, (3) rapids and falls. Searchlights and horns are used to avoid accidents arising out of fogs. During winter ice-breakers keep the river fit for navigation. The obstruction caused by rapids and falls has been successfully removed by deepening the river and constructing canals. The more important of the other navigable waterways of Canada are the Red river, Albany, Saskatchewan, Mackenzie and Yukon. The less important rivers are the Fraser, Skeena and Columbia. With the exception of the St. Lawrence and the Great Lakes, the traffic on the rivers of Canada is rather of a local character.

U. S. A. is well furnished with a network of waterways covering nearly 20,000 miles. The two most important rivers are the Missouri and the Mississippi. The Mississippi is navigable for 2,000 miles from its mouth to the port of St. Paul. The Upper Mississippi carries an immense volume of traffic throughout the year, but the Lower Mississippi is scarcely used. The great defect of the river is that it suffers from heavy floods. The Ohio, a tributary of the Mississippi, is navigable

up to Pennsylvania and carries much coal traffic. The Missouri, which joins the Mississippi at St. Louis, can be navigated almost to the foot of the Rockies. It is also subject to great floods. The proximity of the sources of the Mississippi and the St. Lawrence has made it possible to connect them by means of canals.

The rivers of South America are very important for commerce. Almost all the important rivers flow to the eastern coast. The rivers flowing to the west coast are of little use for navigation. The Amazon is the longest river of the Continent which provides with its tributaries 50,000 miles of safe navigation in the wet season and some 20,000 miles in the dry season. The tributaries of the Amazon are also navigable. Up till now the Amazon system is of relatively little use, because the region through which the river flows is densely forested, scantily populated, undeveloped and largely unexplored. The Orinoco which flows through Venezuela is a long waterway. But the most useful in South America is the Parana system which penetrates the heart of Argentina, Paraguay, Uruguay and South Brazil. In the southern side of South America the river Rio Negro drains the sheep-rearing land of Patagonia.

Rivers are the main highways of commerce in Africa. The Nile is the most important river in north-east Africa, but its great defect is the succession of cataracts. In its upper course the Nile has rapids and falls; in its middle course there are cataracts. It is navigable in the delta and in its lower course. The rivers of South Africa are of little use for traffic. The Zambesi is navigable for 250 miles, while the Limpopo can be navigated only for a short distance. The Orange is not navigable. In tropical Africa, the Congo provides a magnificent system of waterways. It rises in the highlands between the lakes Tanganyika and Nyasa. But at several places navigation is interrupted by rapids and falls. The Ubangi, the chief tributary of the Congo, can be navigated almost to its head. In West Africa the Niger is easily navigable for 500 miles and in the wet season navigation is continued farther. The Gambia is navigable for 200 miles from its mouth. In Africa rivers will continue to be very useful for commerce for some-time more. It is quite likely that in future the great lakes of the Continent will provide valuable waterways.

The most important river systems of Asia are confined to India and China. Northern India is especially endowed with three large navigable rivers which provide more than 20,000 miles of waterways. These rivers are the Ganges, the Brahmaputra and the Jumna. The Ganges can be navigated by steamers as far as Kanpur. This river flows through the most densely populated and fertile plain of India and naturally commands much traffic. Before the development of railways, the Ganges was of considerable importance for the movement of goods and persons. The development of railways has greatly reduced the importance of steam navigation, specially in the Upper Ganges. The Lower Ganges is, even now, very important, and there is traffic all the year round. The Indus in Pakistan is navigable by steamer up to Dera Ismail Khan in the North-Western Frontier Province, 800 miles inland. The river mostly handles wheat, cotton and wool. The Chenub and the Sutlej, two tributaries of the Indus, are also navigable by small steamers. The frequent shifting of its bed and the formation of sand-bar have caused steam navigation in the Indus to be neglected. The Brahmaputra flows through Assam and East Pakistan, and is navigable as far as Dibrugarh. Its tributary, the Surma, has made steam navigation possible in Sylhet and Cachar.

The rivers of Southern India are usually shallow and so do not lend themselves to navigation. Navigation is further impeded by the rocky beds and floods of the rivers. Moreover they flow in torrents during the monsoon, but become almost puddles in deep gorges or rocky beds or a vast expanse of sand in summer. The Mahanadi, the Krishna and the Godavari can be navigated in the upper courses, but traffic on them is not considerable.

Burma is very fortunate in having a large number of navigable rivers. The Irrawady, the most important and the largest, is navigable by steamers for more than 500 miles from its mouth and country boats can proceed farther.

Rivers are the principal highways in China. Three great rivers, the Hwang-ho, the Yang-tse-kiang and the Sikiang, cross the country from west to east. The Yang-tse-kiang, the most important of them, rises in Tibet, and with its tributaries drains the heart of China. It is navigable by steamers for more than 1,000 miles from the mouth. Sea-going vessels can use

the port of Hankow, 680 miles high, for loading tea and other products for Europe and America. The river in its upper course flows by the province of Szechwan, one of the richest areas of China in silk, opium, cotton and minerals. Consequently, the river traffic on this part of the Yang-tse-kiang is very brisk. The Hwang-ho also rises in Tibet. It is of little use for navigation as it is swift and shallow. Its name (which means 'Yellow') is due to the colour imparted to it by the yellow loess soil over which it flows. The river sometimes causes so much damage by floods that it is called 'China's sorrow'. The Sikiang rises in the highlands of Yunan and has a fairly direct course eastward to its mouth. It is navigable for the greater part of its course. The Pei-ho is important for communication and can be navigated up to 'Tientsin.

Ocean Transport

Modern international trade is mostly sea-borne. Ocean highways link different countries together and develop foreign commerce. Ocean transport is cheaper than land transport because the long highways on the seas are always ready for use. The countries surrounded or touched by oceans are more favourably placed than those devoid of sea board.

In number and total tonnage of shipping Great Britain is the leader. The following figures give the relative positions of the different countries in respect of number and tonnage of shipping in the period immediately preceding the second World War.

MERCANTILE SHIPPING OF THE WORLD

(000 omitted)

<i>Countries.</i>	1934		1938	
	<i>No.</i>	<i>Tons.</i>	<i>No.</i>	<i>Tons.</i>
Great Britain ..	7,469	17,734	6,722	17,900
British Dominions ..	2,498	3,106	2,255	3,100
France ..	1,567	3,298	1,231	2,900
Germany ..	2,043	3,690	2,459	4,500
Japan ..	1,949	4,072	2,337	5,600
Norway ..	1,908	3,981	1,987	4,800
U. S. A. ..	3,045	10,354	3,000	11,400
World Total ..	30,997	65,576	29,763	68,400

During the World War II, the aggregate tonnage of shipping destroyed was so enormous that the work of reconstruction and replacement is being carried still. On the long-distance routes, there is still much leeway to be made up before condition becomes normal.

Ocean steamers may be classified into two classes : (a) liners and (b) tramps. The essence of a liner system is the maintenance of regular routes and ports of call, sailing on advertised dates. A liner may be of a passenger liner service or of a cargo service. A passenger liner service is used primarily for the carriage of passengers and mails, and is, therefore, designed both for luxury and speed. A cargo liner, which carries large quantities of merchandise, usually operates on routes where speed is not the main requirement.

Tramp steamers have no regular routes or time of sailing and go wherever cargo is to be had.

Although steamers may cross the oceans in every direction, there are certain definite sea routes which are followed because of their freedom from navigational hazards.

THE PRINCIPAL OCEAN ROUTES OF THE WORLD

1. *The North Atlantic Route* has the greatest traffic of all ocean routes. Nearly one-fourth of the tonnage of the world's merchant vessels serves this route. This route connects the ports of Western Europe with those on the east coast of North America. Ports of departure are Glasgow, Liverpool, Manchester, Southampton, London, Rotterdam, Bremen, Bordeaux and Lisbon. Ports of call are Quebec, Montreal, Halifax, St. John, Boston, New York, Baltimore, Charleston, Galveston and New Orleans. The chief steamship services are the Cunard Steamship Co. and the White Star Line.

The exports of Canada and the U. S. A. to Europe are timber, live cattle, fresh meat, dairy product, leather and hides, fruit, fish, wheat, raw cotton, maize, tobacco, oil, iron and steel, asbestos, etc.

II. *The Panama Route* connects the Pacific with the Atlantic. The important ports of call along this route are Colon, San Diego, Vancouver, Prince Rupert, Callao and

Auckland in New Zealand. The chief steamship services are the New Zealand Shipping Co. and the Royal Mail Steam Packet Co.

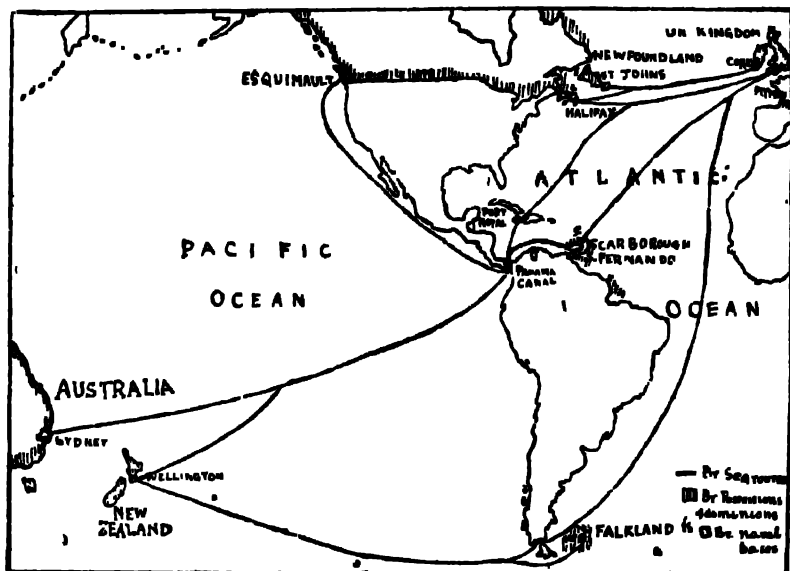


FIG. NO. 38. The Atlantic Routes—one to North America and the other to South America

The Panama Canal has not only opened several new routes, it has also altered certain old ones. Before the construction of the Canal the only sea route between the eastern and the western sea boards of the Americas was by Cape Horn. The trade relations between the Far East and the eastern coast of the Americas were then maintained by the Suez Canal.

The Panama Canal serves mainly the eastern coast of the U. S. A. in its trade with Australia, New Zealand, Japan, China, and the western parts of South America and North America.

III. *The Suez Canal Route* is second to the North Atlantic in respect of volume of traffic. It commands the markets of Eastern Africa, Persia, Arabia, India, the Far East, Australia and New Zealand. In fact, this route passes through the heart of the world and touches more lands and serves more people than any other route. Through its many ports of call, it

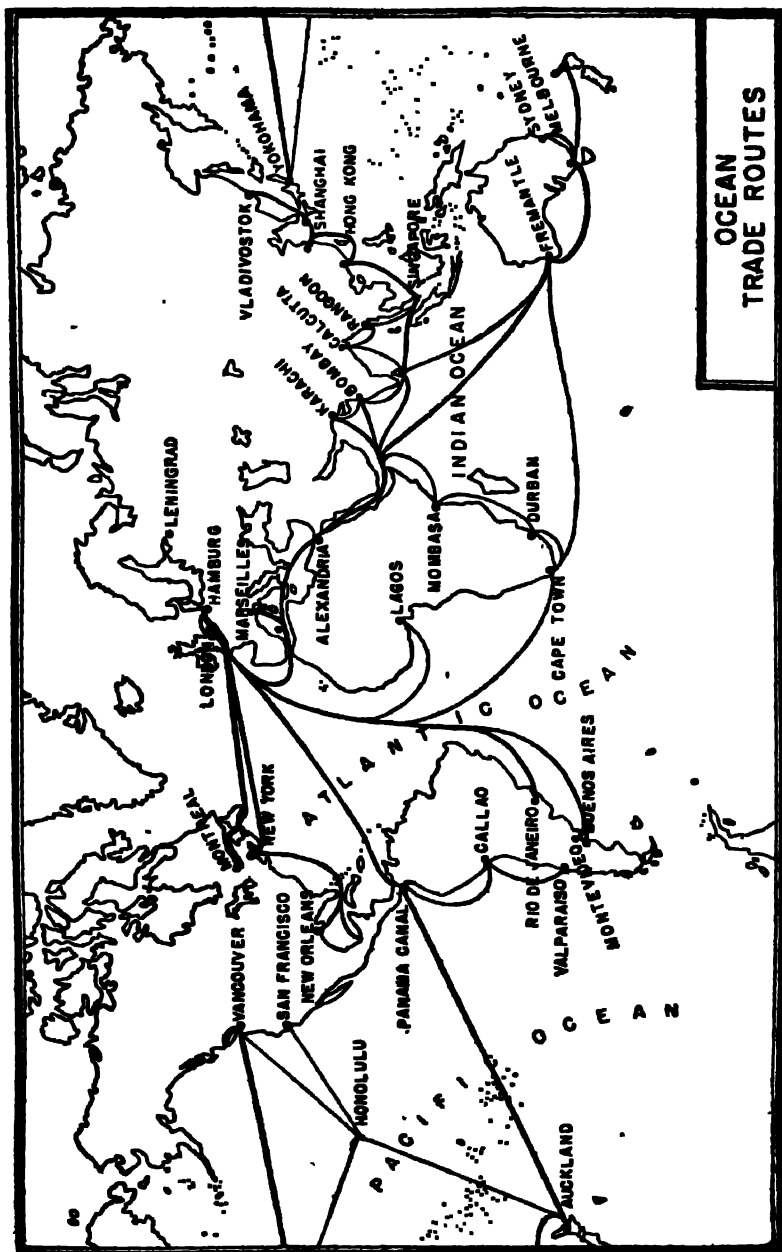


FIG. NO. 39. The Suez and the Cape routes. Note that Australia may be approached from Europe by both the routes.

reaches about three-quarters of the total population of the globe. After crossing the Red Sea, the route follows two directions—one along the eastern coast of Africa to Durban ; another to the further east—to India, Australia, etc. Ports of departure are London, Liverpool, Southampton, Hamburg, Rotterdam, Lisbon, Marseilles, Genoa and Naples. The ports of call are Aden, Bombay, Calcutta, Rangoon, Penang, Singapore, Manila, Hongkong, Perth, Adelaide, Melbourne, Sydney, Mombasa, Zanzibar, Mozambique and Durban.

The Suez Canal Company charges a very high canal tax, for which it is not possible for every steamer to avail of the Suez route. Steamers carrying cheap cargo for Australia and New Zealand generally pass through the Cape route. It is interesting to note that nearly half the exports of Australia for Western Europe goes by the Cape route. Sometimes passengers from Europe—mostly colonists—who are bound for Australia and New Zealand prefer the Cape route because of low shipping rates.

This route is served by the Peninsular and Oriental S. N. Co., Ltd., the British India Line, the Australia Commonwealth Line and the Japan Mail Steamship Co. Ltd. The India-owned Scindhia-line is also now operating between India and Great Britain.

Along this great highway the East sends its raw materials and food-products to the western markets and receives in return manufactured articles. The products of China and Japan are rice, tea, sugar and silk ; those of India coffee, tea, rice, wheat, indigo, spices, raw cotton, teak, hemp, silk, skins, leather and oil-seeds. From Australia fresh meat, timber, wheat, flour, fruit, hemp, wool, butter, wine and kauri gum are sent. Pakistan sends jute, tea, hides and skins.

IV. *The Cape Route* connects Western Europe with the western and southern parts of Africa. The route also serves Australia and the New Zealand. Many European colonists going to Australia and New Zealand from Europe avail themselves of this route, for it is cheaper than the Suez route. As the western sea board of Africa is economically very backward, the volume of traffic to and from this part is very small. Moreover, the sea is shallow for nearly five to seven miles

from the coast. The chief ports on the European coasts are London, Liverpool, Cardiff, Southampton, Swansea, Libson and Ascension. The ports of call are Port Elizabeth, East London, and Cape Town in South Africa and Adelaide, Melbourne, Sydney and Brisbane in Australia.

The important steamship services are the Union Castle Line, Australian Commonwealth Line and P. & O. Line.

The exports of tropical and South Africa are palm oil, ivory, gum, rubber, cabinet wood, hides and ostrich feathers.

V. *The West Indies and South Atlantic Route* leads to West Indies, Brazil and Argentina. The chief ports of call are Kingston (Jamaica), Havana, Vera Cruz, Tampico, Pernambuco, Bahia, Rio-de-Janerio, Santos, Montevideo, Buenos Aires and Rosario. The exports are sugar, bananas, raw cotton, mahogany, tobacco, silver, rubber, coffee, rose-wood, diamonds, grain, wool and meat.

The chief services are the Royal Mail Steam Packet Co., the Pacific Steam Navigation Co., the Lamport and Holt Line, Elders & Fyffes, and the Imperial Direct West Indian Mail Service Co., Ltd.

This route maintains trade connections between Europe on the one hand and West Indies, Carribean Sea board, Brazil, Uruguay and Argentina on the other.

VI. *The Pacific Route.*—The Panama Canal has made the Pacific Ocean prominent as a highway of commerce. This route, which is of growing importance, connects the Pacific coast of America with Asia. It also connects Australia and New Zealand with America. The great development of industries in Japan and China has further increased the importance of the Pacific route. The exports of the Far East to America by this route are tea, silk goods, sugar, tobacco, rice, hemp, and carpet, while the imports from the U. S. A. consist of cotton, wool, oil, metal goods, machinery and railway plants. The chief steamship services are the Peninsular and Oriental Line and the Japan Mail Steamship Co., Ltd.

A survey for a sea level canal to link the Atlantic and the Pacific oceans, 200 miles south-east of the Panama canal has already begun.

CANALS AND SHIP CANALS

Canals are artificially constructed water-channels used mainly for navigation. Canals are mainly dug (a) to shorten long voyages by connecting seas, gulfs or oceans, (b) to make inland centre ports, (c) to avoid falls and rapids of rivers, and (d) to enable a country to handle its own traffic within its own borders when its rivers flow through foreign lands. Ship canals are of large dimensions and can admit vessels of great size. As they are usually cut across isthmuses, they greatly reduce the distance by sea between certain countries. They also place great inland towns in direct communication with the sea.

THE SUEZ CANAL.

The idea of cutting a canal between the Red Sea and the Mediterranean occurred to some Frenchmen as early as 1846, as they found the crow-fly distance between these two seas to be only seventy-five miles. The excavation was started in 1859 under De Lesseps, a French Engineer, who took full ten years to construct the canal. It was

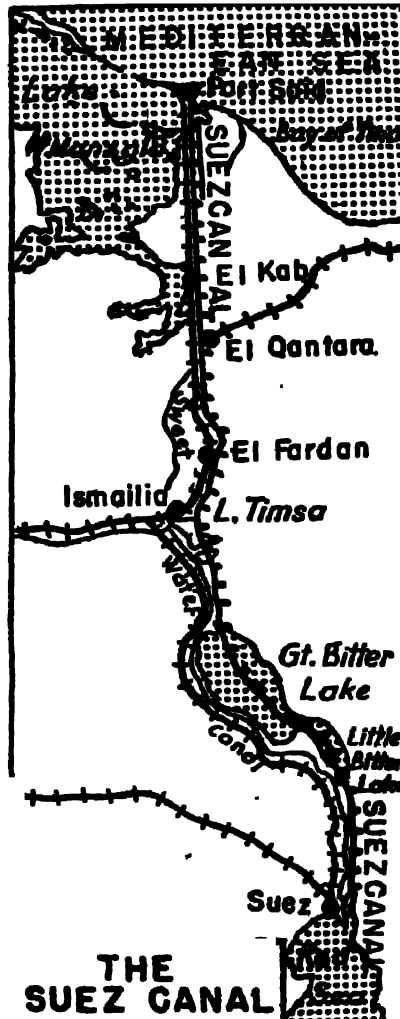


FIG. NO. 40. The Suez Canal The canal is free and open, in time of war as in time of peace, to every vessels of commerce or of war, without distinction of flag.

opened in November, 1869. It is 103 miles long with a minimum width of 150 feet and a depth of 33 feet. The canal is at sea level throughout. The Suez canal is not owned by any Government but by a company, the majority of whose shares are in the hands of the U.K.

Before the opening of the canal, steamers plying between Europe and Asia had to pass round the whole African continent. The canal opened up a new shorter route and affected rapid expansion of trade between these two continents, reducing the distance by 5,000 miles. It must be admitted that the importance of the Cape ports declined considerably after the opening of the Suez.

RELATIVE ADVANTAGES OF THE SUEZ CANAL, TO EUROPE, ASIA AND AUSTRALIA

From	Liverpool to	Bombay	Batavia	Hongkong	Sydney
	<i>via</i> Cape	10,730	11,205	13,195	12,626
	<i>via</i> Suez	6,189	8,516	9,785	12,235
Distance saved		4,541	2,689	3,410	391

Before the construction of the Panama Canal, the usual trade route between the eastern coast of North America and the Far East was through the Suez. The Suez Canal saved a great deal of distance by diverting the traffic from the Cape of Good Hope route to itself and thus benefited North America greatly.

RELATIVE ADVANTAGES OF THE SUEZ CANAL BETWEEN THE EASTERN COAST OF NORTH AMERICA AND THE FAR EAST

From	New York to	Bombay	Batavia	Hongkong
	<i>via</i> Cape	11,511	11,986	13,966
	<i>via</i> Suez	8,102	10,426	11,676
Distance saved		3,409	1,557	2,293

The canal is of utmost importance to the British Empire, for it connects the United Kingdom with her Eastern colonies and dependencies. In order to keep the passage safe through the Mediterranean Sea the British fleet guards the entrance at Gibraltar and the exit at the Suez.

The Suez Canal has provided not only the fastest but also the most economical line of transit between Europe and the East. About 6,000 vessels pass through the canal, and nearly two-thirds of the net tonnage is British. Italy, Germany, Holland, France and Japan are next in importance.

The Suez route passes through the heart of the Old World and touches more lands and serves more people than any other route. Fuel is available at the two ends of the route—oil in Burina and East Indies, and coal in Western Europe.

The Suez Canal has got a new traffic rival since the opening of the Panama Canal. A shorter route is now provided by this canal to the U. S. A. to maintain trade relations with Japan, Hongkong and the Philippines. The Panama Canal also shares with the Suez Canal a small portion of the traffic of Europe bound for New Zealand, Australia and Japan.

There are certain drawbacks of the Suez Canal. It is narrow and shallow, and therefore large types of modern vessels cannot pass through it. This defect is being gradually remedied by widening and deepening the canal. It is now possible for ships over 40,000 tons to pass through the canal. The canal has the maximum capacity of handling only 24 ships per day.

Another defect lies in the transit time. Formerly, it took nearly 30 hours to reach one end of the canal from the other.* Now the transit time is much shorter—it is slightly over 12 hours. Enlargements at some places and numerous improvements have been made. Search-lights and lighthouses guard the course.

The most serious drawback, however, is the high canal dues levied on ships which pass through the canal. When speed is not essential, many cargo-liners follow the Cape of Good Hope route to avoid the high dues. Recently the canal dues have been reduced.

According to an International Convention (1886), which is a recognised part of International Law, the Suez Canal is *free and open, in time of war as in time of peace to every vessel of commerce or of war, without distinction of flag.*

THE PANAMA CANAL. The completion of the Suez Canal gave a great impetus to the proposal for a canal to

* One vessel is tied up to the bank while the other passes through.

connect the Atlantic and the Pacific Oceans across the Central American Isthmus. At first two rival routes were proposed—through Panama Isthmus or through Nicaragua. Panama offered great advantages in respect of length and situation. But the work could not be undertaken before 1907 because of political disturbances in the State of Panama. The region through which the Panama Canal has been constructed is hilly and is composed of hard rocks. The difficulties were removed by cutting the rocks and constructing a series of locks.

The Panama Canal was opened on 15th August, 1914. The canal is owned by the Government of the U. S. A. The length of the canal from shore to shore is $40\frac{1}{2}$ miles, and from deep

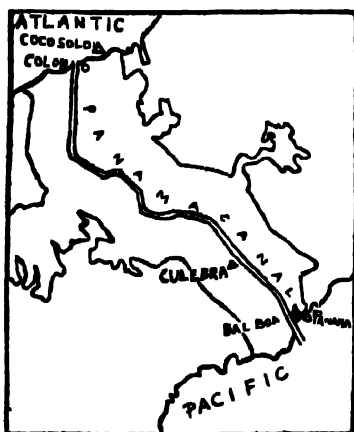


FIG. No 41. The Panama Canal
It is $40\frac{1}{2}$ miles from shore to shore.

water on the Atlantic side to deep water on the Pacific side, 50 miles. It has a minimum depth of 41 feet. The passage through the canal takes seven to eight hours. The canal can handle 48 ships per day.

The canal has given rise to many new routes and to certain alteration in the old ones. Formerly the only sea route between the eastern and the western coasts of the Americas was by Cape Horn. The canal has brought the Pacific coast of America in close touch with the

Atlantic coast of the same Continent. The canal is a political and strategic link that enables the U.S.A. Navy to function on either side of the country at will, should the occasion arise.

THE PANAMA CANAL AND ITS EFFECT ON COMMERCE

(i) The distance between the Pacific coast of South America and the Atlantic coast of North America has been greatly reduced.

New York to
via Magellan
via Panama

Valparaiso
.. 8,400
.. 4,600

As a result of the opening of the canal, the volume of trade between these two areas has increased considerably.

(ii) Australia and New Zealand are nearer to the U.S.A. by this route.

New York to Wellington (New Zealand) Sydney (Australia)

<i>via</i> Panama ..	8,500	<i>via</i> Panama ..	9,700
<i>via</i> Magellan ..	11,300	<i>via</i> Suez ..	13,400

(iii) It has opened up a new route for Europe for going to Australia and New Zealand. There is practically no saving in distance in using one route in preference to the other, but steamers usually follow the Suez route.

Liverpool to	Sydney	Wellington
<i>via</i> Panama ..	12,400	<i>via</i> ¹ Panama .. 11,100
<i>via</i> Suez ..	12,200	<i>via</i> Suez .. 12,500

(iv) It has brought the ports of Japan nearer to the Atlantic ports of North America.

New York to	Yokohama
<i>via</i> Panama ..	9,700
<i>via</i> Suez ..	13,100

(v) The Panama has reduced the distance by sea to a considerable extent between the eastern and western coasts of North America. There is a saving of more than 7,000 miles. As a matter of fact, before the opening of the Panama Canal there was practically no sea-borne trade between these two coasts.

(vi) The western sea board of the Americas has been brought nearer to Europe by more than 5,000 miles.

The Panama Canal is essentially an American Canal. Europe is not benefited by this canal in its trade relation with Asia, Africa and Australia.

The opening of the Panama Canal has, no doubt, made many changes in the ocean routes; but it must be admitted that its effect on the trade and commerce of the world has not been so great as was brought about by the opening of the Suez Canal. China and Japan have increased their trade relations with the U. S. A. with surprising rapidity after the opening of the Panama Canal.

The route does not suffer for want of fuel. American coal and oil are cheaper than those found on the Suez line.

There are certain disadvantages of the Panama Canal. The canal has six duplicated locks as it has a total rise and fall of 85 feet in crossing the Isthmus. The regions along the route are neither densely populated nor commercially very productive. Moreover, the Pacific Ocean itself is a vast one with few points of call.

THE KIEL CANAL. The sea route from the Elbe round Jutland to the Baltic is about 600 miles in length and a voyage through this route is a piece of dangerous navigation. The Kiel Canal connects the Baltic with the North Sea at the mouth of the Elbe and makes the voyage only 61 miles long. It was completed in 1895 ; it has a depth of 38 feet and 144 feet bottom width. It is capable of allowing passage to large sea-going vessels.

The canal is of great commercial and strategic value to Germany.

THE MANCHESTER SHIP CANAL. It is the most important canal in the British Isles. It was constructed in 1894 from Eastham, on the left bank of the Mersey to Manchester. The canal is $35\frac{1}{2}$ miles long, the minimum depth is 28 feet, and the minimum bottom width is 120 feet. Since its completion the traffic has grown steadily year by year. Before the construction of the canal Manchester had to depend on Liverpool from where raw cotton used to come by railways. To-day steamships can come as far as Manchester.

Other important ship canals are the Amsterdam Ship Canal, the Stalin Canal, etc. *The Amsterdam Canal* permits Amsterdam to maintain a direct route with the North Sea. The canal was originally constructed in 1876. *The Stalin Canal* has created for Soviet Russia a direct sea route from the Baltic to the Arctic Ocean. It connects Leningrad with the White Sea.

Air-Transport

Aviation is the latest development in transport. The last World War gave a great impetus to the development of aerial transport. There are two types of air vessels—airships and aeroplanes. The airship is lighter than air, while the aeroplane

is heavier than air. So far much progress has been made in the use of aeroplanes. In spite of the fact that aviation is the quickest method of transport, it will not be able to compete with railways and ships for the movement of cheap and bulky goods. But aerial transport will be preferred to other modes in moving mails, precious goods, and, to some extent, passengers.

Air-transport is controlled to a great extent by climatic conditions. Heavy rain or snow storms suspend flying operations temporarily. Ground fogs also make safe landing of aeroplanes difficult. Again, the relief of the land over which flying will take place must be taken into consideration. Level lands are favourable for landing grounds. Commercial flying has, therefore, developed greatly in lowland regions like the U. S. A., Germany, Russia, U. K. and Holland.

In regard to paying load—freight, transport and mail passenger—France is first in Europe and sixth in the world. The other countries in order of importance are England, Holland and Belgium. In Great Britain aerial transport is steadily developing. The British Overseas Air Corporation—a combination of different companies—maintain connections not only with Europe but also with the distant countries of the Empire. A regular service is maintained with India, South Africa and Australia. At present services in connection with civil aviation have been nationalised in Great Britain.

The amount of air-traffic in the United States exceeds the total of all other countries. The three chief air-lines are the United Airlines, American Airlines and Trans-continental Airlines, which are linked with those of Canada and South America.

MILEAGE OF REGULAR AIR-ROUTES

(civil aviation)

1938

U. S. A.	...	...	...	71,200
France	...	...	...	41,000
Germany	...	...	...	33,000
U. K.	...	...	...	25,500
India	...	...	...	6,700

At present there are 22 routes in the Indian Union for air services covering about 14,000 route-miles.

THE CHIEF AIR ROUTES OF THE WORLD

1. *Airways between Europe and America.* This route is served by French, American and British aeroplanes. The route follows the Atlantic coast of Africa up to Dakar or Bathurst, and from there it crosses the Atlantic and reaches Pernumbuco in Brazil. Pernumbuco is connected by airways with Santiago in Chile. The U. S. A. air lines meet Pernumbuco along the Atlantic Coast.

2. *Airways between Europe, Asia and Australia* are maintained by the French, Dutch and British aeroplanes. The British air-routes start from London and end in Melbourne *via* Marseilles, Athens, Alexandria, Cairo, Gaza, Bagdad, Bahrein, Sharjah, Karachi, Jodhpur, Delhi, Allahabad, Calcutta, Rangoon, Bangkok, Penang, Singapore, Batavia, Darwin, Brisbane and Sydney.

The Dutch and French air lines follow more or less the British route. Recently Soviet Russia has opened a new line which connects Moscow with Vladivostok on the Pacific.

3. *Airways between Europe and Africa.* The air services between Europe and Africa are controlled by the Italian, French and British aeroplanes. The British own the most important airways system in Africa. The British route starts from Southampton and goes to Alexandria across the Mediterranean. From Alexandria the route goes straight to Khartoum, from where the journey is diverted to two different directions—one branch goes to the west at Lagos, and the other to the south at Capetown.

The French have established two air-routes to Africa. One follows the western coast of Africa and goes as far as French Equatorial Africa *via* Bathurst. The second route goes across the Sahara and the Congo and ends in Madagascar. The Italian air lines goes by way of Tripoli and Cairo to Addis Ababa in Abyssinia.

4. *Airways between America and Asia.* Air-transport across the Pacific is maintained by U.S.A. aeroplanes. The line starts from the San Francisco and goes across the Pacific to Canton *via* Honolulu, Midway Island, Wake Island and Manila.

Germany maintains air service with Norway, Sweden and Finland in the north ; with Poland in the east ; with Czechoslovakia, Yugoslavia and Greece in the south-east ; with Italy in the south ; with Spain and Portugal in the south-west ; and France and the U. K. in the west. The French and Dutch lines competed with the German lines in Western and South-Eastern Europe in peace time.

In the development of airways, the U. S. A. leads the world. There are several trans-continental air lines in the country. The important air-ports are Boston, New York and Washington on the east coast, and Seattle, San Francisco and Los Angeles on the west coast.

QUESTIONS

1. Describe the recent development in transport facilities that have given impetus to agricultural production in Canada. (Cal. B. Com. 1930).

2. What are the principal maritime countries engaged in the carrying of trade in India? What is the place of purely Indian shipping concerns in the sea-borne trade of India? (Cal. B. Com. 1928).

3. What do you know of the British Imperial Air-route in the East? State your opinion about the prospects of Air-Transport in India. (Cal. B. Com. 1927).

4. "The traffic through the Panama Canal has increased with surprising rapidity in recent years." State briefly the factors that have led to the improvement. What are the principal commodities that pass through the canal? What are the main defects of this route to the east and how are these going to be remedied? (Cal. B. Com. 1927).

5. Discuss the present position of mercantile marine in the important maritime countries of the world. What do you know about the recent development of India in this direction? (Cal. B. Com. 1926).

6. "The opening of the Panama Canal has brought about many changes in ocean routes, but by no possibility can it have such an important effect on the commerce of the world and lead to such rapid expansion of trade and traffic as was brought about by the opening of the Suez Canal." Discuss this statement. (Cal. B. Com. 1926).

7. Discuss the importance of the Suez route to India's external trade. How will this trade be affected if the route be temporarily closed? (Cal. B. Com. 1936).

8. Describe the Suez Canal with the object of showing its commercial value. (Cal. B. Com. 1924).

9. "Canada is the making of railways." Explain.

10. Distinguish between a Tramp and a Liner. What are the routes of going from India to the Pacific ports of South America?

11. Discuss the relative advantages and disadvantages of the Suez and Panama routes from Western Europe to Eastern Asia. Large quantities of jute goods are exported from Calcutta to the Pacific ports of South America. What route do the ships follow for this trade, and why?
(Cal. B Com. 1934)

12. State the present distribution of the world's merchant marine. How have the relative positions of the countries in regard to merchant marine changed since the last Great War? Who are the principal carriers of India's sea-borne trade? What are "Tramp" steamers, and what commodities do they carry?
(Cal. B Com. 1934).

13. Compare and contrast the conditions of inland water transport in England and Germany.
(Cal. B. Com. 1933).

14. How does the Cape Route compare with the Mediterranean from India to Europe? In what way will India's trade with Western Europe be affected if the latter route is blockaded during a war?
(Cal B Com 1938).

15. Describe the present development of airways in the British Empire. Draw a map of the world and indicate the air routes between Europe and Asia.

16. Discuss the possibilities of opening railway lines between India and Europe

17. Discuss the past and future effects on commerce and international relations of the construction of the Panama Canal.

(I I B. 1944).

CHAPTER IX

DEVELOPMENT OF PORTS AND HARBOURS

A port is essentially a gateway to the land from the sea, and also, none the less truly, a gateway to the sea from the land. It is a place on the water route where ships can find accommodation during the process of loading and unloading.

The dual operation of loading and unloading cargo involves two important characteristics in a port, without which its functions cannot be satisfactorily performed. These characteristics are shelter and accommodation.

It is not easy for a ship to load or unload goods in an exposed and unprotected situation on the sea coast. In British West Africa, where the coastal sea is very shallow, ships are compelled to lie at some distance off the shore. If the sea is violent all the year round, it is equally difficult to perform shipping operations.

Thus, in order to perform loading and unloading with ease and safety, ships require shelter on the coast. It is an important requirement. The idea of shelter is closely associated with the term harbour. A harbour is a place of shelter for ships. There are two kinds of harbours—(a) artificial and (b) natural. *A natural harbour is generally an indentation in the coast-line sufficiently enclosed or protected by its environment and topographical features to provide a tranquil water area for shipping.* San Francisco, Liverpool and Cork possess excellent natural harbours.

Artificial harbours are constructed in places where environment and topographical features are unfavourable. *Breakwaters and dredges* are always used. The object of breakwater is to break up and disperse waves for preventing agitation of the water surface within the harbour area so that ships can lie in safety. Where the water is shallow, dredges keep the outlet deep. Los Angeles and Madras have artificial harbours.

An ideal harbour should be (i) well-protected against storms, (ii) free from ice during winter, (iii) deep enough for

vessels, with fairly deep water near the shore, (iv) wide enough to give room for large ships to turn in, (v) sufficiently spacious for docks and wharves, and (vi) accessible to the interior by straight and level routes.

The next important requisite of a port is accommodation. Accommodation means facilities and opportunities for carrying on trading operations. A harbour by itself does not suffice for all the requirements of a port, which must include convenient and continuous accessibility and facilities for the landing and loading of goods, the embarkation and disembarkation of passengers, quays, sheds, warehouses, cranes, service roads and railway tracks, and repairing depots.

The fundamental importance of a port consists in the extent and productiveness of its hinterland. The term hinterland is borrowed from Germany. It means a region to which a port acts as 'door'. The trading operations of the port of Calcutta are performed for Bengal and Bihar ; and, therefore, we may say that the hinterland of Calcutta includes these two provinces. The resources of a hinterland should be bountiful, if the port is to develop greatly. A dense population, rich economic products and a good transport system make a hinterland productive. In short, a hinterland should possess inducements for trade. The extent of the hinterland of a port depends on the nature of the means of communication. Communications bring the different parts of the hinterland in close touch with the port. A port is a connecting link between land and water traffic ; and, therefore, it must be connected with the surrounding areas by roads, railways, rivers and canals. Hinterlands are generally of two types—distributory and contributory. A *distributory hinterland* imports goods either to feed the dense population, or to supply the inhabitants with the necessities and luxuries of life. Goods are also imported as raw materials for manufacturing industries. The hinterland is *contributory* when the goods are exported. These goods may be food or raw materials or manufactured articles. The trade of a port reflects the conditions of production, consumption and transport facilities of its hinterland.

There may be several ports in the same hinterland. Traffic will flow to those ports which will offer greater trading facilities.

Bombay, Okha, Porbandar and Navalakhi on the western coast of India compete with one another. The ports of Kathiawar are getting more traffic because of lower port charges than those of Bombay.

Ocean ports, river ports, canal ports and estuary ports are so named because of their locations. These ports have different functions to perform ; each of them owes a large share of its industrial development to the ease of obtaining raw materials and the existence of assured markets.

OCEAN PORTS may be divided into four classes according to the character of the harbours and their relation to the routes on the lands :

(1) Open roadsteads, *e.g.*, Boulogne : These are usually poor, because they do not afford good and safe harbours with sufficient depth, and protection from winds and waves. They are rarely located near the mouth of large valleys, and therefore, transportation towards the interior is hampered.

(2) Bay ports, *e.g.*, Boston. Harbours at such places may be safe, commodious and deeper, and there may be plenty of room for docks.

(3) River ports like Calcutta and Chittagong have the advantage of easy communication inland, but they often suffer from lack of depth and space for anchorage, docks and wharves. Room can only be found by extensive digging or by going far or down the river.

(4) Ports with both a bay and a river are commercially most advantageous. They usually combine safe and commodious anchorage with sufficient room for docks and wharves, and with easy access to the interior.

RIVER PORTS.—All navigable rivers have towns situated on their banks, where the products of the immediate neighbourhood are collected, and transported up and down the rivers. The importance of these ports depends upon the navigability of the rivers, the suitability of their situation on the river banks, and also upon the productivity of the neighbouring districts.

For a study of ports a fair knowledge of entrepôts is necessary. *Entrepôts are ports which import commodities for the purpose of re-export.* In short, these ports act as middlemen

and their main function is redistribution. These ports collect goods not for the local areas but for certain regions which cannot import directly from the sources. Singapore, a port at the end of the Malaya Peninsula, receives the products of the adjoining islands for exporting them to the different parts of the world.

The commodities which are handled by the entrepots must possess certain characteristics. "The goods must have high value, small bulk and good keeping quality."

Distance between the place of origin and destination of goods also influences the entrepot trade. The hold on the trade of the entrepots is great when the origin and destinations of the traffic are remote. Spices, drugs, silks, and other tropical products are consumed in small quantities by the European countries. It is a great economy when these commodities are distributed from some western entrepot. Hamburg, on the Elbe, is the entrepot for Norway, Sweden and the Baltic States. An excellent example of an entrepot is afforded by Port Said, where all the routes from the West meet before passing the Suez. The great entrepots of the world are London, Colombo, Singapore, Hamburg and Shanghai.

Standard of comparison. The standards by which the importance and prosperity of ports can be measured are various, and hence are not simple and easy. The following are usually employed :

1. The number of ships visiting a port during a year.
2. The tonnage of shipping.
3. The tonnage of goods discharged or handled in and out.
4. The marketable value of the produce dealt with.

The importance of a port cannot be measured simply by the number of ships visiting it every year, because the ships may be very small or big in size. The size and importance of the vessels can be ascertained to a certain extent from the tonnage of shipping. In addition to this, the tonnage of goods handled by a port can also be a very good standard of comparison. But it has one great drawback : it makes no distinction in the nature of goods, whether valuable or merely bulky and cheap.

SOME IMPORTANT PORTS

EUROPE. The important sea ports of Europe are situated on the north-west coasts. The chief of these are Hamburg at the mouth of the Elbe ; Rotterdam on the Rhine ; Antwerp on the Scheldt and Havre on the Seine. The hinterlands of these ports are very extensive and productive.

The hinterlands of the Mediterranean ports have become important after opening of the Suez Canal, which has made the Mediterranean Sea one of the most important highways of commerce. The chief sea ports are Marseilles, Genoa, Naples and Trieste. The Baltic and the Black Seas are almost land-locked and, therefore, have no important ports, although Constantinople and Copenhagen occupy very favourable position.

London is situated at the head of the Thames estuary 55 miles from the sea. Dredging operations are not generally necessary, as the tide rises from 16 to 21 feet at London Bridge. "London has for a long time played the role of an immense international warehouse. It receives products from all over the world, which it immediately re-exports." From an entrepot, it has become the greatest money centre in the world. The principal commodities imported are wool, grain, timber, refrigerated meat, tea, coffee, sugar, dairy produce, wines, spirits, tobacco, rubber, fruits, carpets, etc.

Trade and industrial activities of London are also great. There are paper mills, chemical plants and factories

for rayon. Clothing, furniture, jewellery, hats, etc., are also made. London is the most important port of the British Isles.

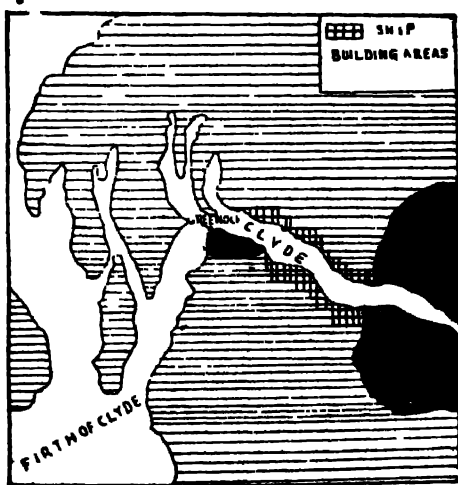


FIG. NO. 42 The harbour and port of Glasgow.

It receives between 30 to 40 p.c. of British imports, and despatches more than 25p.c. of the country's exports.

Glasgow is the largest ship-building centre in the world. The port is situated on the Clyde, 20 miles east of Greenock. The Clyde banks from Greenock to Glasgow are noted as ship-building regions with many docks. The sheltered position of the Clyde, the supplies of iron-ore and coal in the neighbourhood, the depth of the river—these have made the Clyde estuary an ideal ship-building area.

Although Glasgow is an engineering centre, it has developed other industries as well. Woollen goods, the manufacture of carpets, dye works, glass works, chemical works, oil refineries, paper mills, soap works, the making of confectionary, etc., are there not only to meet the needs of its great population but also for markets abroad.

Liverpool is situated at the mouth of the Mersey estuary. It competes with London for the premier position. It is the leading port for the importation of raw cotton, grain and provisions. Woollen and steel goods, pottery, chemicals, hardware, etc., are exported. The hinterland of Liverpool not only covers South Lancashire, but also Yorkshire, Staffordshire, and Cheshire.

The port of Liverpool handles more than one-third of the passenger traffic of Great Britain. Flour-milling, sugar-refining, chemical, soap-making, etc., are the principal industries. Liverpool is also an air port.

Cardiff is the leading port for the shipment of coal, not only in Great Britain but also in the world. It is not only a coaling port; it also deals in timber, grain and iron-ore. The densely populated area in the vicinity of the port requires a steady influx of food-stuffs. There are also important iron and steel works in the port area. The prosperity of Cardiff has been threatened recently by the falling off in the demand for coal from abroad, due to various reasons. Oil is now largely used for ship and locomotive engines. Moreover, several countries have developed hydro-electric power. These factors have affected adversely the coal-export trade of Cardiff.

Manchester is situated on the river Irwell, a tributary of the Mersey. It is connected by a ship canal with Liverpool.

It is the fifth port in Great Britain. Its central position has made it a collecting centre of raw cotton for dispatch to various towns. It is interesting to note that about 90 per cent. of Lancashire's spindles are confined within 17 miles of Manchester.

Hamburg, the most important port of Germany and one of the principal ports of the Continent, is situated on the Elbe at a distance of nearly seventy miles from the open sea. The estuary of the Elbe has been dredged to a sufficient depth. As the port is connected with the plains of Germany by water-ways and railroads, the commerce of the country converges towards it. Hamburg is a great entrepot or warehouse port. It imports coffee, cocoa, sugar, coal, cotton, wool and manufactured goods not only for Germany but also for Scandinavia and the Baltic States. Exports include manufactured goods, salt, sugar, cattle and dairy products. The port competes for traffic with Rotterdam and Antwerp.

Now that the construction of the Ems-Weser and Hansa canals has been completed, Hamburg has got direct water communication with the industrial Ruhr Valley. Much of the trade which used to pass through Rotterdam and Antwerp is now handled by Hamburg. Cuxhaven is the outport of Hamburg.

Rotterdam is situated on the New Mass, a distributory of the Rhine, and is connected with the sea by a deep canal known as the New Waterway. It is a great transshipment port at which goods are transferred from ocean-going vessels to river crafts for transmission by the channels of the Rhine, and by inland waterways, to the great manufacturing districts of Westphalia and the inland cities of Germany, Holland and Belgium. Although Rotterdam is the natural gateway of the Rhine, Germany has taken elaborate measures to divert the Ruhr traffic to Hamburg through the Hansa canal.

Antwerp, in Belgium, is situated at the mouth of the river Scheldt. It is one of the greatest ports in the world. It has a large entrepot trade. Its hinterland includes Belgium, Eastern France, the Rhine Valley and the Ruhr coalfield. The traffic of Antwerp mainly deals with liners and general cargo. The port competes with Rotterdam and Hamburg. In 1947 Antwerp ranked first amongst the sea ports of the European continent.

Marseilles is the first port and second city of France. It is situated some 30 miles east of the Rhone mouth. Its position at the head of the Gulf of Lyons and at the entrance of the Rhone Corridor has made it very important. It has been greatly benefited by the opening of the Suez Canal. By a deep-water canal it has recently been connected with the Rhone. It has not only made the trade with the East very convenient, it has also got direct access to the French North African Colonies. Wheat, oil-seeds, sugar, coffee, hides, silk, spices and other Eastern products are imported. Among its local industries may be mentioned particularly the refining of oil and the making of soap.

NORTH AMERICA. The important ports of North America are Montreal, New York, Boston, Halifax, New Orleans, Mobile and Galveston on the Atlantic, and San Francisco, Oakland, Seattle, Vancouver and Portland on the

Pacific. The hinterlands of the Atlantic ports are very extensive and rich in economic resources while those of the Pacific ports are poor.

Baltimore, on Chesapeake Bay, is a great port and distributing centre. It is connected with the Middle Appalachian Region by cheap water transport. Tobacco, iron and steel goods, and artificial fertilizers are manufactured in addition to fruit-canning. It is the biggest city in South-East U.S.A. and contains more than 800,000 people.

*Boston** is the commercial gateway to the great in-



FIG. NO. 43 Boston harbour is a sheltered bay.

* Harvard University is situated at a distance of three miles from Boston.

dustrial district of New England. Boston harbour is a sheltered bay ; it is well situated with regard to Atlantic routes ; and it is served by railways which reach Portland, New Brunswick, Montreal, New York, etc. Yet Boston deals with less of the traffic of New England than does New York.

It is the nearest port to Europe which has a dense population and a rich hinterland. The port is open all the year round. It has also a big coasting trade. Hides, skins, cotton, wool, etc., are imported for the neighbouring districts. Sugar, textiles, paper, leather and iron and steel are manufactured.

Montreal, situated at the confluence of the Ottawa and the St. Lawrence, lies at the limit of ocean navigation. It is the most important port of Canada. It is 300 miles nearer to Liverpool than New York. Its harbour, in extent and equipment, is one of the finest in the world, but its great drawback is that the navigation is closed by ice during the winter months. Montreal is the largest city of Canada and contains more than 800,000 people.

New Orleans, situated at the mouth of the Mississippi at a distance of 10 miles from the Gulf of Mexico, is the largest city of the Cotton-Belt of the U.S.A. Its hinterland includes the rich Mississippi-Missouri basin. Originally New Orleans was important as an outlet for the fur trade. To-day, it is a great cotton port, and exports cotton, refined petroleum and wheat to North-West Europe in large quantities. Cattle, timber and maize are also exported. *New Orleans is not so well situated as Boston or New York for trade with Europe.*

New York is the greatest commercial gateway to America. Nearly one-half of the total foreign trade of the U.S.A. passes through it, and as such, it is supreme in America. It has the heaviest coastwise traffic. It actually handles more wheat, coal and timber than any other port of America, possessing, as it does, special large-scale facilities for handling heavy goods.

Advantages of New York : (a) It has easy access to a large and rich hinterland by canals and railroads. (b) It has an excellent harbour.

**SHARE OF PORTS IN THE FOREIGN TRADE OF THE U.S.A.
(1939)**

<i>Imports into U.S.A.</i>		<i>Exports from U.S.A.</i>	
New York ..	.. 34 p.c.	New York ..	.. 34 p.c.
Galveston ..	.. 13	Boston ..	6
New Orleans ..	7	Philadelphia	9
San Francisco	5	New Orleans	6

The important Pacific ports of North America are San Francisco, Los Angeles, Seattle, Portland and Vancouver. These ports have large harbours with good shipping facilities. But these ports have certain drawbacks: (a) their hinterlands are small and sparsely populated; (b) the Pacific coastal region

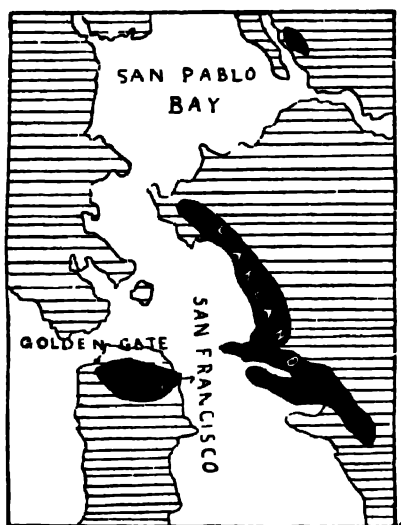


FIG. No. 44 Ports of San Francisco and Oakland.

is industrially less developed; (c) long distances and difficult routes separate these ports from the Continental interior.

San Francisco is the most important port on the Pacific coast. It is on the hilly peninsula to the south of the Golden Gate, and is connected with Oakland by train ferries. It handles lumber, grain, oil and fruits, tea, silk and sugar are imported from the Far East.

S O U T H A M E R I C A .

Although the size of South America is twice that of Europe, its ports are few. The Atlantic ports command greater traffic because of the great extent of their hinterlands. The *Andes* are set close to the Pacific coast, and there the Pacific ports have limited resources. The principal ports of South America are Rio-de-Janeiro, Buenos Aires, Valparaiso, Montevideo, Bahia, Guayaquil and Bahia Blanca.

Rio-de-Janeiro is the capital of Brazil; it is also the chief sea port. The harbour is commodious and safe. The hinterland is extensive, and it includes Sao Paulo, Mines Geraes,

Panama and Travessia. The railways connect Rio-de-Janeiro with Sao Paulo, Uberaba, Sta. Maria, Bello, Horizonte and Victoria.

Buenos Aires is the capital of Argentina and stands on the river Plata. It is also the chief sea port. The Rio de la Plata is both a river and an estuary, as it fulfils some of the conditions of each. According to international law, it is a river and is the world's widest—137 miles. The river is generally shallow, and therefore, constant dredging operations are carried on. Recently dock accommodations have been improved. Buenos Aires is the chief outlet for the produce of the agricultural and pastoral districts of the Republic. Wheat, maize and linseed are exported in large quantities. It is also a great railway centre.

Valparaiso is the most important port on the Pacific coast of South America. It is situated on a fine bay and its position is similar to that of San Francisco. Its hinterland includes the rich mineral districts of Chile. Nitrate of soda, copper, silver and gold are exported. The port is connected with Buenos Aires by railways. A new port has been developed at St. Antonio, 43 miles to the south of Valparaiso.

Montevideo is the capital of Uruguay, it is also an important port. It possesses a large harbour, but the water of the shore is very shallow because of the accumulations of silt. Large ships have to anchor two or three miles away from the shore, from where goods are carried to the port by lighters.

Guayaquil is the chief port of Ecuador. It has an excellent harbour at the estuary of the river. The main drawback is the unhealthy climate of the port. Ivory-nuts and coffee are exported.

ASIA. *Karachi* is the chief port of Pakistan situated nearer the mouth of the Indus in Lat. 20°47' N, Long. 60°58' East. Karachi is not yet an industrial centre: it is of importance as the principal market and port of shipment for the surplus produce of West Pakistan. Wheat, cotton, barley, rice, gram, oil-seeds, wool, hides and skins and animal bones are the principal exports. The imports include woollen piece-goods, sugar, machinery, iron and steel, mineral oils, coal and coke.

Bombay owes its importance to its excellent geographical location and to its magnificent natural harbour. It is situated

on an island in the Bombay Presidency in Lat. $18^{\circ}55'$ N, Long. $72^{\circ}54'$ E.

The harbour is safe and spacious and covers some 74 square miles. It affords ample shelter to shipping throughout the year. "The entrance to the harbour is from the South-West ; and the Colaba peninsula, the narrow strip of land which constitutes the southern extremity of Bombay Island, forms a natural breakwater affording protection from the violence of the monsoon."

The hinterland includes the whole of the Deccan and Central India and extends to East Punjab. The port is connected with Northern India by the B. B. and C. I. Ry. and with the Deccan, Central India and the Gangetic plain by the G. I. P. Rly.

Cotton is the most important commodity which is brought down to the port from the Deccan and Central India for export. Hides, grain, seeds and manganese ore are also exported. The chief imports are machinery, oil, sugar, timber, meat, etc.

It is interesting to note that while Calcutta is served by a magnificent waterway-system, no navigable river connects Bombay with the interior.

Cochin is the most important port between Bombay and Colombo. It is nearly 300 miles nearer to Aden than Bombay.

"The system of backwaters running parallel with the coast affords cheap transport and excellent waterways connecting several places of importance in the Cochin and Travancore States and when the natural situation of the port has been fully developed, its position should ensure a very great increase in its trade."

Madras is the chief port of the Madras Presidency. Till the construction of an artificial harbour Madras was an open roadstead with a surf-beaten coast-line. The harbour is connected with the different parts of the Deccan and Northern India by railways. The chief imports are coal, oil, manures, paper, timber, sugar, metal, glass and glassware, chemicals, machinery, motor vehicles, etc. The chief exports include groundnuts, tobacco, ores, manures, coffee, onions, etc.

Calcutta is situated in Lat. $22^{\circ}33'$ N, Long. $38^{\circ}21'$ E on the river Hooghly. It is a great sea port, although it is 120 miles distant from the sea. Its hinterland includes Bengal,

PORTS AND HARBOURS

Bihar, U. P., Assam and Orissa, and also extends to East Punjab and the northern part of the Deccan. The port serves the great coal, tea and jute industries of Bengal and Assam and the wheat, rice and seeds traffic of Bihar, U. P. and C. P. It imports cotton piece-goods, metals and ores, oil, machinery, hardware, paper, motor vehicle, liquors, etc. The exports are jute, tea, rice, pulses, hides, lac, pig iron, mica, manganese, etc.

The port facilities are excellent. But the river Hooghly is a difficult river to navigate. Sand banks and bars frequently make the navigation dangerous, specially within 40 miles of Calcutta. Dredging operations are constantly required.

Akyab is the only sea port on the western coast of Burma. It has a sheltered bay, but as a port it is not very important. Its hinterland is neither extensive nor very productive. Besides, the port has no railway communications with the interior.

Rangoon is the chief port of Burma. It is situated on the Rangoon river, about 24 miles from the sea. Timber is the most important commodity exported from here. Rice and petroleum are also exported.

Singapore is situated on the southern side of the island of Singapore in the Straits Settlement. The island of Singapore is about 27 miles long and 14 miles wide, and is separated from Sumatra by the Strait of Malacca. The population of Singapore is nearly 50,000. It is the chief entrepot for the whole of the Malaya Archipelago. It exports rubber, tin, copper, pine-apples, etc. Imports include petroleum, tobacco, sugar, iron and steel, machinery, etc.



FIG. No. 45 Singapore.

Hongkong is situated on the mouth of the Canton river and consists of an island. The Canton river, which is navigable for more than 600 miles, brings down the produce of China in river steamcraft to *Hongkong* for transshipment. It is equally important as an entrepot port. Its principal trade is rice, which is sold for distribution inland and for re-exportation

abroad. After rice come sugar, cotton, tea, coal, flour, oil and opium. The harbour of Hongkong is extensive and spacious ; its only drawback is that it is exposed to the influx of heavy seas from the west during the prevalence of typhoons.

Growth of Trade Centres

Trade centres are places where trade is carried on, and goods are collected, distributed or transferred from one means of conveyance to another.

Towns and trade centres do not spring up of their own accord, nor are they just haphazard collections of houses and other buildings. Their origin and growth are the direct consequences of the division of labour, the outcome of the operations of geographical control and the result of man's environment. "A city is not only a place in space ; it is also a drama in time."

In early days, when the volume of commerce was very much smaller than what it is today, the interchange of commodities used to take place between individuals at the common meeting place. The growth of trade centres originated from the necessity of such a common meeting place. Before the commodities are interchanged, they are transported to the trade centre. Hence easy transport facility is the most essential condition for the growth of trade centres. The means of transport should also be cheap.

Conditions favouring the growth of cities:

1. Religion and religious foundations had great town-creating powers. The rise and growth of Mecca, Lhasa and Benares should be associated with religion and pilgrimage.
2. Many towns and cities have grown up as health and pleasure resorts to give relief to the distress caused by the smoky manufacturing centres, *e.g.*, Madhupur, Bath, the Riviera towns, etc.

The sea coasts of many countries have assumed great importance to many people as vacation resorts. The sea coast is cool and pleasant, particularly during summer, and thousands of people go there in that season.

3. Natural wealth, especially useful metals and minerals, always attracts people to the mining districts and contributes to the rise and growth of new towns. For example, we may refer to the growth of many towns in the vicinity of Bengal coal-fields. Even when climate and other conditions are remarkably unfavourable, wealth in the concentrated form of precious metals and minerals brings masses of men together, as we find in the case of the hot desert of Australia.

4. Towns tend to grow at the confluence of two regions producing different commodities, because they give the population of the two places a meeting ground for the mutual exchange of their goods. Milan, situated at the foot of the Alps, is a good example in point: here products of the plain and of the mountains are exchanged.

5. Water-power and its conversion into electricity have caused and aided the growth of the "Fall towns" like Richmond, St. Paul, Buffalo and Minneapolis in the U. S. A.

6. Towns grow at places which are most convenient for the receipt of goods in bulk and for their distribution. The world's great cities are generally ports and railway centres.

7. Historical and political movements often influence the development of capitals more than the physical conditions under which they have been established. Delhi, Washington and Paris are examples.

8. The origin and growth of many towns are due to the commercial and strategic advantages of their position, e.g., Peshawar and Istanbul.

9. In recent years many cities and towns have sprung up owing to their importance as educational centres. Oxford, Cambridge, etc., are examples.

Oxford and Cambridge sprang up many centuries ago.

10. (a) Junction of valleys, which usually means junction of rivers.

(b) Crossing-places of roads in a plain: e.g., Vienna, Delhi, etc.

There are about 250 cities in the world with a population of 200,000 each. More than 48 p.c. of these towns are in Europe.

QUESTIONS

1. State the necessary conditions for the development of good sea ports. Apply these considerations to any of the following :—

- (a) Montreal, (b) Fremantle, (c) Shanghai, (d) Buenos Ayres, (e) Trieste.
(Cal. Inter. 1925, 26).

2. Describe the position of any four of the following ports and discuss the parts they play in the commerce and industry of the country they serve : (a) Rotterdam, (b) Yokohama, (c) Genoa, (d) Galveston, (e) Buenos Ayres.
(Cal. Inter. 1928).

3. What factors make for the successful development of a river port? Give a few conspicuous examples.
(Cal. Inter. 1934).

4. What do you understand by the hinterland of a port? Illustrate your answer with reference to a few ports in the different parts of the world.
(Cal. Inter. 1934)

5. Account for the importance of any four of the following :—
(a) Harbin, (b) Warsaw, (c) Colombo, (d) Minneapolis, (e) Chicago and (f) Manchester.
(Cal. Inter. 1933)

6. State the situation and describe the reasons for the importance of any five of the following : (a) Buenos Ayres, (b) Chicago, (c) Danzig, (d) Durham, (e) Hobart, (f) San Francisco, (g) Sydney, (h) Vancouver and (i) Yokohama.
(Cal. Inter. 1931).

7. State the situation and describe the reasons for the importance of any five of the following : (a) Alexandria, (b) Durban, (c) Marseilles, (d) New Orleans, (e) Shanghai, (f) Sydney and (g) Vancouver
(Cal. Inter. 1933).

8. State the situation and mention the geographical circumstances giving importance to any five of the following : (a) Glasgow, (b) Winnipeg, (c) Danzig, (d) Mosul, (e) Singapore, (f) Hongkong, (g) Durban, (h) Los Angeles, (i) Buenos Ayres, (f) Brisbane
(Cal. Inter. 1926).

9. What are the most important geographical conditions favouring the growth of commercial towns?

10. "The importance of a port depends mainly upon the extent and the productiveness of its hinterland." Discuss the statement.
(Cal. Inter. 1940, I. P. S. 1930).

11. What are the important factors in the origin and development of sea ports? Illustrate your answer with reference to Indian ports.
(I. I. B. 1940).

12. Write notes on any five of the following : (a) Rotterdam, (b) Yokohama, (c) Marseilles, (d) Seattle, (e) Liverpool, (f) Hamburg, (g) Sydney and (h) New York.
(Cal. Inter. 1949)

CHAPTER X

EUROPE

Europe is a very small continent : as a matter of fact, with the exception of Australia, it is the smallest of the continents. It has a total area of 3,760,000 square miles. Asia is five times as large as Europe. Physically, Europe is a mere peninsula of the vast continent of Asia.

Europe is the most highly civilised region in the world. Its manufacture and commerce have reached the greatest development yet known. Certain geographical factors have mainly contributed to its greatness.

Europe has longer sea coast than any continent in proportion to its area. The Baltic, the Mediterranean and the Black Sea have deeply penetrated into the continent and thereby made ocean-transport the most economical form of bulk conveyance. The situation of Europe in higher latitudes has made the climate neither very hot nor very cold. With the exception of the Tundra and Taiga, every part of Europe is habitable. The climate helps the rapid progress of its people.

More than 31 per cent. of the total area of Europe is forested. The principal forest-belt stretches from Scandinavia to the Urals. The forest resources of this belt are best exploited in Sweden, Finland and U.S.S.R. The second important belt extends from the highlands of Southern Germany to Yugoslavia. Europe does not export timber in considerable quantities because the local demand for it is always great.

Nearly one-half of the mineral wealth of the world is raised in Europe. Coal-fields are found in Great Britain, France, Belgium, South Holland, Germany, Southern Russia and North Spain. Europe produces about 50 per cent. of the world's coal. Most of the coal of Europe are anthracite or good bituminous type. As the coal-fields are mostly located near the seaside or the river-valleys, the cost of transportation is not high.

Europe is also the leading producer of iron-ore. The important iron-ore regions are in North Spain, Eastern France,

Northern and Southern Sweden, and in Russia (Krivoi Rog, Kursk and Magnitogorsk). There are large petroleum-deposits in the Caucasus, the Urals and Rumania. Europe raises 13·7 per cent. oil of the world's total. Lead, zinc, platinum, copper, potash and aluminium ore are also found in large quantities. But deficiency of minerals in Europe is noticeable with regard to petroleum, lead (17 p.c.), tin and manganese. This is a serious disadvantage in view of the fact that Europe consumes each of these minerals to the extent of 50 per cent. of the world's total. Europe also produces small quantities of silver, gold, nickel and tin.

The agricultural lands of Europe are its greatest resources. It exceeds all other continents in the production of wheat, oats, barley, rye and flax.

	World production (in millions of quintals, for the year 1935)	European production
Wheat	1,319	640
Barley	426	233
Oats	687	415
Rye	492	470
Potatoes	2,018 *	1,848
Sugar beet	781	689
Flax	6	6

The Mediterranean region, the lowlands of North-Western and Central Europe and the eastern lowlands are the agricultural regions. Farming is highly intensive and the methods of cultivation are scientific. Yields per acre are also high. Nearly 56 per cent of all the inhabitants of Europe earn their living by farming. Therefore, the continent may be described as rural. Europe produces, normally, about 50 per cent. of the world's wheat. Wheat is cultivated in a wide belt extending from the Danube basin to the southern Urals. The continent produces, on the average, 62 per cent. oats and 95 per cent. rye of the world's supply. In the production of potatoes, sugar beet and barley she surpasses all other continents combined. In spite of the tremendous progress in the agricultural production, Europe imports food and agricultural raw materials from all parts of the world because of the dense population and high standard of living.

Europe is the greatest manufacturing region of the world. In the manufacture of chemicals, cement, textile fibres and iron goods, her position is incontestable. She is surpassed only by the U.S.A. in the production of automobiles, electrical equipment and metal wares.

She has developed her means of communication and transport remarkably. The merchant marine of Europe represents more than 70 per cent. of the world's tonnage. It is interesting to note that while the merchant tonnage of Great Britain is decreasing, that of Norway, Italy, France and Holland is increasing rapidly.

Europe has more than 2,30,400 miles of railways. It makes approximately 4·8 miles per 10,000 inhabitants, and 2·3 miles of railroads for 40 sq. miles. India has a little over 40,000 miles of railway lines (8,000 inhabitants per mile of line) and 100 sq. miles per 2 miles of railway lines. But Europe does not possess the largest railway mileage. U.S.A. and Canada have more than 270,200 miles of railways. In airways, the supremacy belongs to Europe. It maintains regular air service with Asia, Africa and Australia.

Europe accounts for 52 per cent. of total world trade in normal times and this trade is concentrated in the hands of only 19 per cent. of the world's population and takes place over only 4 per cent. of the world's area.

**PERCENTAGE DISTRIBUTION OF FOREIGN TRADE,
POPULATION AND AREA OF THE WORLD (1939)**

Region	Trade p.c.	Population p.c.	Area p.c.
Europe (excluding U.S.S.R.)	52	19	4
Asia (excluding U.S.S.R.) ...	14	53	20
North America	... 15	7	15
Latin America ...	... 9	5·5	16
Africa ...	... 6	7	23
Australia ...	... 3	0·5	6
U.S.S.R. ...	... 1	8	16

Europe has a little over 500 millions of people. This figure represents more than one-fourth of the total population of the globe. The distribution of population is very uneven. The

mountain regions of Iceland, the highlands of Scotland, the largest Scandinavian mountains, the Norrland of Sweden, the north-eastern part of Finland, the boreal forest and the Tundra along the shores of Arctic Ocean are almost uninhabited. Heavy densities with more than 260 people per square mile are found in the Ukraine, Moravia, Silesia, Bohemia, Saxony, Westphalia, the Rhineland, Southern Holland, Belgium, North France and England.

Union of Soviet Socialist Republics

The vast territory of the U.S.S.R. (Russia) extends for about 6,000 miles from the Baltic to the Pacific Ocean. It occupies the whole of the great plain of Eastern Europe and the adjoining Asiatic territories. It is more than twice the size of the whole of Europe and covers nearly one-seventh of the total land surface of the world. As a political unit its area is exceeded only by that of the British Empire. It is bounded on the north by the Arctic Ocean and on the west by Rumania, Poland, the Baltic States and Finland. The east is bounded by the Pacific Ocean. Numerous mountains, plateaus, deserts and semi-deserts, inland seas, etc. form the southern boundary of the State.*

The coast-line is regular and extremely short in comparison with the size of the country. The northern shores are frozen during winter as they are in the Arctic circle. The Pacific coast also remains closed to navigation during winter. Murmansk is the only ice-free port throughout the length of Russian coast-line. As the port is situated on the extreme north-west it receives the warming influence of the North Atlantic Drift. It has recently been connected by rail with Leningrad.

Throughout the whole of Russia winters are excessively cold except in the extreme south. Rainfall and temperature are not much influenced by the bordering seas. Rainfall is maximum during summer.

The entire region to the west of Yenesei consists more or less of plains and lowlands. The highest point of the plain is

* The territory of Russia consists of two disproportionate areas: the smaller (25 per cent. of total area) comprises Russia in Europe, the larger (75 per cent.) is in Asia.

a little above 1,000 feet. The regions to the east of the river Yenesei are highlands.

Russia, the largest country in Europe, is divided up into a number of Soviet Republics, which have grouped themselves into the Union of Soviet Socialist Republics (U.S.S.R.). Before the Bolshevik Revolution of 1917 the country was a unitary State ruled by autocratic Czars. The present Soviet confederation consists of 11 constituent Republics, *viz.*, Russia (in itself forming a Federation), the Ukraine, White Russia, Azerbaijan, Armenia, Georgia, Turkmenistan, 'Uzbekistan, Tadzhikistan, Kazak and Kirghizia. These members of the Confederation include, moreover, numerous autonomous units (autonomous republics, autonomous territories, autonomous districts) inhabited by small nations. The total area of the Soviet Union in 1939 was 8,173,550 square miles. In March 1940, the twelfth Soviet Republic—the Karela-Finnish Soviet Socialist Republic—was created out of the territory ceded by Finland. The 13th, 14th, 15th and 16th Republics were formed in August, 1940. These are Moldavian S. S. S., Estonia, Latvia and Lithuania. Thus the total area of the Soviet Union in 1940 increased to 8,348,100 square miles with 194 million population. In 1945 the eastern part of Poland beyond the *Curzon line* was also annexed to the Soviet Union.

Russia contains approximately 9 p.c. of the world's population. The greatest concentration of population is found in the Ukraine where more than 20 p.c. of the inhabitants of Soviet Russia live. The average density per square mile in European Russia is twenty-five persons, and in Asiatic Russia, less than two persons. The average density for the whole Union in 1926 was only seven persons per square mile. Although there are more than 150 towns with more than 100,000 population in each, nearly half of the total population lives in villages.

Before the Revolution of 1917 Russia was industrially a backward country. The Soviet Government has brought in a new life to the country. Within a short span of time, the Union has developed its industries remarkably. In 1928-29, the Government devised a five-year economic programme not only for reorganising agricultural economy but also for reorganising the heavy industries. 'The Second Five-Year Plan' (1933-37) was formulated and worked to make the country

industrially self-sufficient and to redistribute her industry in such a way as to locate her great industrial enterprises where power was available or where there was an abundant supply of raw material, and also, to utilise to the full the labour resources in the different parts of the country. When the war broke out the Union was working the Third Five-Year Plan in which provision was made for "(1) increased regional self-sufficiency, especially as regards food-stuffs, fertilizers, bricks, cement, etc. and (2) for a further shift of the industrial centre of gravity to the east." The Fourth Five-Year Plan for 1946-50 has been introduced with the main purpose of rehabilitating the war-ravaged regions of the country. Russian economy suffered the most grievous losses at the hands of Germans in 1941-44. Russia lost a half of her coal and steel capacity and two-thirds of her iron ore. Similarly the oil industry sustained substantial injury and the damage done to agriculture was considerable. Besides, 25 million people were rendered homeless due to destruction of dwelling houses by bombing. Soviet sources place the material damage done to their country at half the material devastation in Europe estimated in money terms at 679 billion roubles. The Plan aims not only at resorting agriculture and industry to the pre-war levels but also at surpassing these levels to a great extent. The Plan also urges the development of certain territories of U.S.S.R. The Plan, however, does not mention the areas over which the industrial enterprises will be distributed.

Soviet Russia has widely extended the cultivation of crops. Great attention is paid to the proper regional distribution and increased production of wheat, sugar beet, cotton and rice. Russia is now the greatest wheat-producing country in the world.

The farming activities in Russia are at present carried on under two methods—*Kolkhozes* (large-scale collective farms) and *Sovkhozes* (large-scale State farms). Under *Kolkhozes* system, the farmers combine and work collectively with the support of the State which supplies machinery, seeds and tractors. At present 75 per cent. of the Russian farmers work in such collective farms. *Sovkhozes* or State farms are mostly to be found in the south-east of European Russia and in Siberia.

The special feature of Soviet agriculture is that the direct consumption of food-stuffs is so high that there is never a great percentage of marketable goods. Another feature is that the northern Russia is mainly a grain consuming area and can satisfy only $\frac{1}{6}$ of its demand by its own production of food.

**RUSSIA'S CONTRIBUTION TO THE WORLD PRODUCTION OF
CERTAIN AGRICULTURAL CROPS (IN P.C.)**

	1913	1939		1913	1939
Grain ..	.. 16	25	Flax ..	.. 30	58
Sugar beet ..	.. 10	25	Cotton ..	.. 3	10

In European Russia, wheat is not only cultivated in the rich black earth lands of the south but also in the more

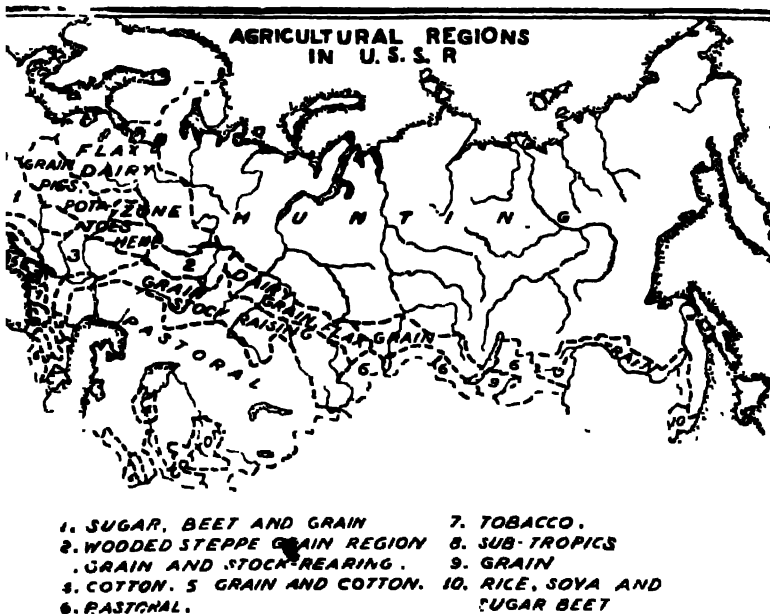


FIG. No. 46

northerly latitudes by clearing the forest and adopting scientific methods. Wheat cultivation has increased rapidly in Siberia as well. Orenburg region, Kazak and Karakalpak are the other principal wheat-producing regions. In spite of the rapid exten-

sion of wheat cultivation in other areas, the Ukraine is still the leading wheat-producing region in Russia.

Sugar beet is cultivated in the region between Kiev and Kursk, Transcaucasia, West Siberia and Lake Baikal region. Soviet Russia raises nearly one-fourth of the world production of sugar beet and occupies the first place in the list of producers. The other crops are rye, barley, flax, tobacco and tea. Russia produces about 50 per cent of the world's output of rye. The areas for barley are the Ukraine, Steppe region and Siberia. Russia raises about $\frac{1}{6}$ of the world's barley production. She also supplies half of the total world requirements of flax.

Cotton is the most important plant of the Russian staple industries. At present U.S.S.R. is able to meet all her home requirements and also to export cotton fibre. Cotton is cultivated (a) in the Crimea, (b) to the north of the Black Sea, (c) to the north and east of the sea of Azov. Tea and rice are also being raised in considerable quantities.

In 1948 a 15-year plan has been introduced to conquer drought and revolutionise agriculture. According to this plan an area comprising of 13.5 million acres is to be afforested by 1956. Afforestation is considered to be the only reliable method to check soil erosion. Under this plan, huge forest shelter belts are designed to be erected in several rows along the banks of Volga, Ural, Don and Northern Donetz on a total length of 3,300 miles. For irrigation, 44,000 ponds and reservoirs with irrigation canals are to be provided.

Russia is very rich in minerals. She is almost self-sufficient in all strategic minerals essential to modern warfare. As a world supplier, she takes the fourth place in her output of coal, the second for oil and iron-ore and the first for manganese and phosphates. Since 1928 many new mining regions have been discovered and exploited.

U. S. S. R. supplies more than one-tenth of the world production of coal and occupies the fourth place in the list of coal-producing countries. The annual output of coal is more than 93 millions of tons. In 1913 the output was only 29 millions of tons. Before the Revolution of 1917 the Donetz coal-field alone supplied more than 90 per cent. of the Russian output; to-day it supplies about 60 per cent. The principal coal-fields

of modern Russia are Kuzbuz (West Siberia), Tunguz (the Yenesei basin), Irkutsk, Donbas, Pechora (in the Tundra region of the north of European Russia) Burein (in the Amur basin), Yukut (the Lena basin), Kansk (brown coal), Karaganda (in the Steppe region of Asiatic Russia), Minusinsk, Moscow, Central Asia (South of Ferghana), Ural (near Sverdlovsk and

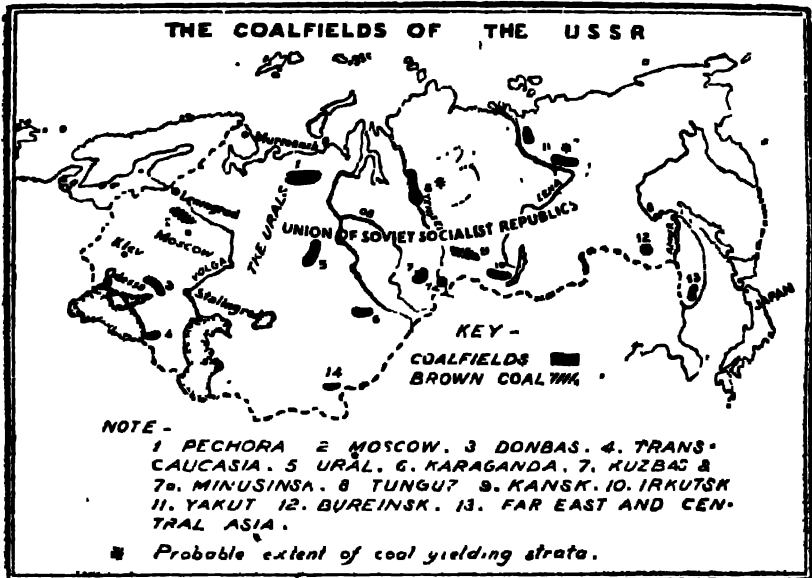


FIG No 47.

Chelyabinsk), Far East (near Valdivostak), and Transcaucasus (near Batum). The Asiatic coal-fields of Kuzbuz, Minusinsk, Irkutsk, Burein and Valdivostok supply fuel to the Trans-Siberian Railway

The U. S. S. R. was until 1939 the second producer of petroleum in the world, but it has now yielded that place to Venezuela.

The oil-producing regions are the Caucasus-Caspian (90 p.c.), Central Asia (4.9 p.c.), Volga-Urals (4 p.c.), and the Far-East (1.1 per cent). The important oil fields are Baku, Grozny, Neftergorsk, Ishimbayev, Dossar, Nebit-Dag, and Sakhalin. Oil is found on the western side of the Urals at Ukhta in the north ; Chussov, to the east of Perm ; Sterlitamak,

to the east of Samara. In 1938, the oil production was 32·23 million tons against 9·23 million tons in 1913. The Third Five-Year Plan provided Soviet's oil-production at 38·5 million tons in 1942.

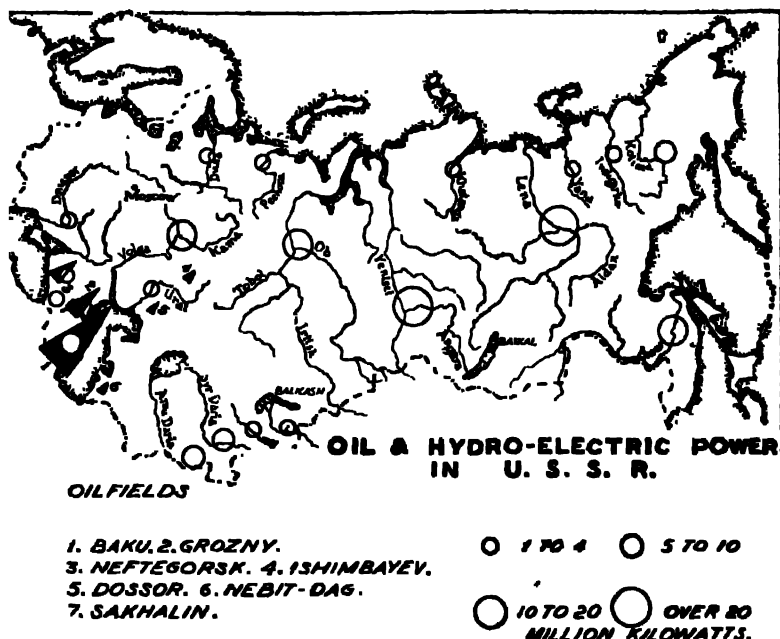


FIG No 48

A number of pipe-lines move the oil to the industrial districts and to the coast for export—(i) From Baku to Batum on the Black sea, (ii) From Grozny and Maikop to Tuapse on the Black Sea.

Russia is one of the greatest iron producers and ranks third in the world. The principal iron-ore regions are :—

- (1) In the neighbourhood of Kursk.
- (2) Near Orsk in the Southern Urals.
- (3) At Telbes in the Kuzbuz region.
- (4) The Murmansk peninsula.
- (5) The Magnet mountain near Magnitogorsk in the Urals.
- (6) At Krivoi Rog in the Ukraine.

In 1938 Soviet Russia produced more than 30 million tons of iron-ore

Soviet Union is the leading manganese producer in the world. In European Russia, manganese is raised in two principal localities (a) near Chiature in the Caucasus of Georgia, supplying most of the ore for export, (b) near Nikopol in Southern Ukraine, about 100 miles north-west of Crimea, supplying most of the ore for domestic consumption. Further east, there are other deposits of manganese at Orenburg in the middle Volga, at Bashkiria in the southern Urals and on the Mazul river in Siberia. Other important minerals are gold, copper, aluminium-ore, bauxite, nickel, platinum, lead and zinc. Russia is one of the leading producers of platinum. Gold deposits are found in the Urals, the Lena Basin and the Lake Baikal region. In 1939 Russia produced about 12 per cent gold, and 22 per cent chromium of the world total. Chromium deposits are found in the Urals, Orenburg, Bashkirian and Kasaksky.

Russia contains more than one-third of the total forest land of the world. There are vast resources of pine, fir, larch and spruce which are used for timber, paper-making and the manufacture of cellulose. The magnitude of the industry can be judged from the fact, that while in 1935 Russia produced 112 millions of metric tons, Canada, the second largest producer, raised only 48 millions of metric tons. The forest lands of the Union cover 2,310 million acres, the major portion of which lies in Asiatic Russia. Most of the forest lands of the European Russia are in the north although the Caucasus contains an inexhaustible supply of many valuable varieties of timber.

Within recent years Soviet Russia has made considerable progress in the manufacturing industries. It is the aim of the Soviet Organisation to effect a wide-spread redistribution of industries throughout the country, so that no particular area can have industrial monopoly. The principal manufactures are machinery, farm implements, motor tractors, motor cars, textiles, leather, pottery, chemicals, refining of sugar, etc. The Soviet industrial organisation thus tries to be dependent on those raw materials which are found only in Russia. There are six chief industrial regions in the Soviet Union of which the Moscow region is the most important. Ninety per cent of

the cotton manufacturers is concentrated in the *Moscow region*. Moscow and Ivanovo are the two important cotton centres. Metal industries are localized at Tula, Moscow and Gorki. The Moscow area is also responsible for 60 per cent. of the Union's chemical industries.

The next important industrial region is the *Ukraine and its Margins*. The Donetz basin of the Ukraine supplies about 45 per cent. of the Soviet steel and 70 per cent. of the aluminium. The Donetz basin is also important for sugar mills,

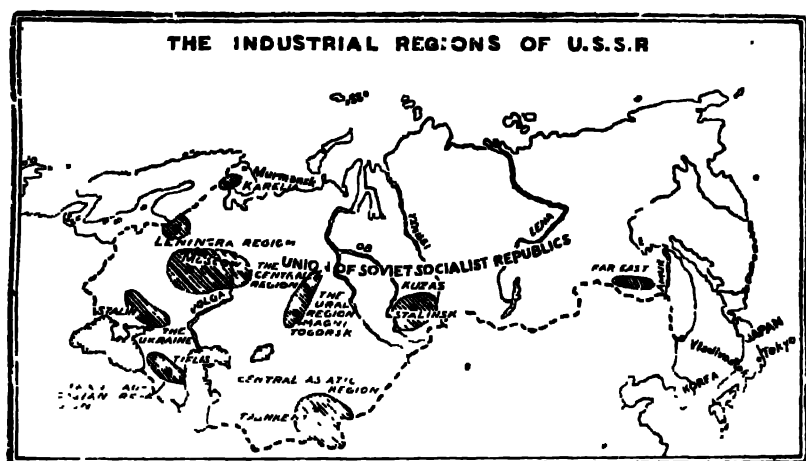


FIG No 49

flour mills and leather factories. The industrial centres are Kiev (grain market), Odessa (agricultural machinery), Krivoi Rog (iron and steel), Dnepropetrovsk (general engineering and thermal power station), Rostov (agricultural machinery), Voroshilovgrad (locomotives), and Stalingrad (iron and steel works).

The *Ural industrial area* is comparatively new. This area includes Perm, Sverdlovsk, Chelyabinsk, Orenburg, and the Bashkir regions. The Ural area produces about 20 per cent. of the pig iron and 25 per cent. of the steel produced in the U. S. S. R. The other industries are chemicals, railway workshops, and armament foundries. The important towns are Magnitogorsk, Nizhni Tagil, Chelyabinsk, Sverdlovsk and Orsk. The Ural area is served by the Trans-Siberian and the Caspian Railways.

The Kuzbuz region in western Siberia has, of late, become an industrial area of great importance. The important industrial towns are Kemerovo (oil refining and metal works), Stalinsk (iron and steel works, locomotives) and Tomask (aeroplanes).

Soviet Central Asia has developed cotton industry, chemicals and iron and steel industry. Tashkent, Bukhara and Stalinabad are the chief towns of Central Asia.

After the outbreak of the World War II *the Far Eastern Area* assumed great importance. As the area is more than 2,000 miles from the Urals, the Soviet Government has made it economically self-sufficient. Yakutsk, Vitim, Komsomolsk, Orlovsk, and Vladivostok are the chief towns of the Far Eastern Area.

The Union plays relatively a small part in the world-trade and the foreign trade is controlled by the State. Exports consist mainly of raw materials (petroleum, timber, furs, flax; to the East, cotton as well) and, in a lesser degree, of manufactured articles (to the East) and food-stuffs (wheat, oats, butter, oil-cake). Imports consist mainly of raw materials which the Union is not yet able to produce in sufficient quantity (copper, rubber, wool, cotton) and manufactured goods like cutlery, machinery, etc. Germany, the U. K. and the U. S. A. are the important trade partners of Soviet Russia. The volume of Soviet trade with Asia is increasing from year to year.

The means of communication in U. S. S. R. are very important because of the vastness of the territory, immense, but sparsely scattered population, the unequal distribution of natural resources, the unfavourable location of industries and the concentration of grain production in the south of the country. The chief means of communication are by rivers, railways and air.

Although the rivers are navigable and widely used for transport, it is unfortunate for Russia that these are either flowing to the land-locked seas or to the Arctic sea. The rivers freeze in winter and dry up in summer. The navigation in some cases is impeded by rapids. The early summers are usually the period of flood for the lands round the mouths of rivers flowing to the north as the snow in the upper parts of such rivers melts first. However, the rivers are long, have a

gentle fall and a slow current which make navigation possible right up to their sources. They also receive many tributaries and flow through agricultural lands. The Russian rivers are utilized for the production of hydro-electric power.

Altogether the Soviet Union has more than 180,000 miles of navigable rivers. The principal rivers of European Russia are the Dvina, Dnieper, Don and Volga—the last-named being the greatest river, in the basin of which lies more than half of Russia. The Obi, Yenesei, Lena and Amur are the principal rivers of Siberia. Russia's waterways handle about 10 per cent. of the total goods traffic. These also provide enormous supplies of hydro-electric power.

For some years the Soviet Union has been trying to open up a northern passage along the coasts of the Polar Sea. Although this passage is only navigable for a few months in the year, it establishes direct maritime communication between Murmansk, Leningrad and Vladivostok.

Russia has about 60,000 miles of railways which serve both economic and strategical purposes. Moscow, the focus of the system, is linked with the Urals, the Ukraine and other parts of industrial Russia to the north and south.

Russia has made wonderful progress in air-transport. All important Russian cities are all linked by regular air services. There are three principal airways, all radiating from Moscow. The one goes to Vladivostok on the Pacific coast *via* Kazan, Sverdlovsk, Omsk, Irkutsk, Chita and Khabarovsk. The second line runs from Moscow to Stockholm *via* Riga. At Riga it is connected with the German airways. The third line goes to Kabul from Moscow *via* Orenburg and Tashkent.

Moscow, the greatest industrial centre of Russia, stands on high ground above the river Moskva. It is not only the capital but also the great nodal centre of Russian routes: from it railways diverge to different directions. Its manufactures are textiles and metal goods, leather goods, paper, etc. The population is over four millions.

Leningrad, on the mouth of the Neva, is a great Baltic port. It is the natural outlet of Russia to western Europe. For four months and a half in the year the port remains ice-bound. Ship-building is important, specially the construction of ice-

breakers. Paper, cellulose and aluminium are the manufactures. Its population is more than three millions.

Baku, on the Caspian Sea, is one of the most important oil-yielding centres in the world. Oil is carried for export by pipelines to *Batum* on the Black Sea. Its population is nearly one million. *Astrakhan*, near the mouth of the Volga, is a fishing port. *Murmansk*, on the north shore of the Kola Peninsula, is the only ice-free port of the north. The port has railway connection with *Leninograd*. *Odessa*, on the north coast of the Black Sea, is the chief port of Southern Russia. The principal export is wheat. *Kiev*, on the Dneiper, is a grain market of considerable importance. It has nearly half a million population. It is one of the oldest cities in Europe. *Rostov*, on the Don, near the north-eastern coast of the Sea of Azov, is an industrial centre where agricultural machinery is made. *Kharkov*, the capital of the Ukraine, manufactures tractors, motor cars and agricultural machinery. Its population is above half a million. *Dnepropetrovsk*, on the Dneiper, has important engineering works. A great dam has been constructed on the Dneiper to supply hydro-electricity to the industries. The population is about 400,000

Switzerland

A continental state with no direct access to the sea, Switzerland is bounded on the west by France, on the north and east by Germany, and by Italy on the south. A series of far-reaching economic and political factors have resulted from this geographical situation.

It is the most mountainous country in Europe. From a territorial point of view, Switzerland is one of the smallest European States. Although her total surface is only 16,000 square miles, her population is more than four millions. There are three important languages in the State. Seventy per cent. of the entire population speak German, twenty-one per cent. French, six per cent. Italian. Far from being a cause of dissension, this diversity of languages constitutes one of the chief reasons of Switzerland's existence in Europe. *"The State has successfully solved the great nationalistic problems which are*

to-day at the root of so many international difficulties ; the State is thus an amalgamation of distinct ethnical groups."

Twenty-two per cent. of the total area of Switzerland is barren land. Cultivated land and Alpine pastures form fifty-six per cent. of the country's productive area and twenty-two per cent. is forest land.

Wheat, rye, oats, barley, maize, potatoes and tobacco are the chief agricultural crops. *Fruits and grapes* are extensively raised. Pasturage constitutes one of the principal features of Swiss husbandry, forming the basis of cattle-breeding and milk production, the development of which ranks among the most important factors of Swiss economy. Besides the production of milk and meat, pedigree cattle-breeding for exportation constitutes one of the principal items. Switzerland's main item of dairy produce is cheese, the consumption of which is considerable both at home and abroad. The cheese trade is conducted at Berne, Lucerne, Zurich and St. Gallen.

The country is poor in minerals. Coal is totally absent. *Real marble, asphalt, salt and glass-sand* are found. The handicap due to the want of coal has been removed by developing water-power which is greatly facilitated by the existence of innumerable waterfalls and rapids. Hydro-electric power is used in industries and transport. There are 31 large hydro-electric power-stations in Switzerland, each of which has an output exceeding 20,000 H P.

The industrial expansion of Switzerland is great. Swiss production is essentially of manufacturing type. "The general tendency of the industry is to seek compensation for the want of fuel and raw material and for inadequate or expensive means of communication by the manufacture of commodities on which skilled labour may be expended ; of this tendency the electric and chemical industries and watch-making are typical." Swiss manufactures have a good reputation in the world market.

Industries :

- (a) Textile industries.
- (b) Machine and metal industries
- (c) Watch-making and allied industries.
- (d) Chemical industries.
- (e) Food and tobacco industries.

Silk industry occupies a very important position in the textile branch. This industry is geographically limited to southern Switzerland. Four-fifths of the products are destined for exportation. The Swiss silk goods are in great demand throughout the world. The industry is centred at Zurich. Silk ribbon industry is carried on at Basle. A large portion of the world's consumption of ribbon is covered by Switzerland which exports over 95 per cent. of its total production. Embroidery and lace industry, knitting and linen industry and hosiery are the other branches of textiles, which are equally important in Switzerland.

Swiss metal works furnish articles of aluminium, copper, brass, nickel and all kinds of alloys. Aluminium bars are turned out in large quantities. *Watch-making is one of Switzerland's oldest and most prosperous industries.* To-day it is mainly carried on in the Zura district. The industry occupies about 67,000 hands. About 95 per cent. of the output of the watch-making industry is destined for exportation. This industry ranks first in the world.

Condensed milk, chocolates, cheese, biscuits, etc., are the chief products of the food industry.

The touring and hotel industry of Switzerland is of considerable importance. No other country in the world offers, in so limited an area, such a great variety of natural beauty and picturesque scenery as Switzerland. It is known as the "Playground of Europe". Practically every type of European climate is to be found within her boundaries. Large numbers of people from different parts of the world visit the country and provide a very important source of income to the State.

Switzerland has no direct access to the sea. Her railway system is highly developed, ranking third in Europe, next to Belgium and England. It possesses in all 5400 km. of railways, representing 1.35 km. per 1000 of population. The most striking feature of railway development is the marked progress in electrification. At present more than 70 per cent. of the Swiss railways are electrified. There are about 10,000 miles of rail road. Aerial service is being developed.

Berne (10,000) is the seat of the Government and the centre of political and economic life. It is also a route-town. The

largest town is *Zurich*. It is not only a great railway centre but a great industrial town also. It manufactures cotton, silk and machinery. *Basel*, situated on the bend of the Rhine, is one of the most important traffic junctions between Switzerland, Germany and France. Other towns are Geneva, Winterthur, Fribourg and Lausanne.

Hungary

Hungary is a small state lying in the middle of the Danube area. It has an area of 35,875 square miles with 8,684,000 inhabitants. The Hungarians or Magyars are a people of Asiatic origin. Till 1919 Hungary was united with Austria in the Dual Monarchy of Austria-Hungary. As a result of the first Great War Hungary became an independent Republic, but she lost two-thirds of her territory to Rumania, Czechoslovakia and Yugoslavia.

The relief of Hungary is typically plain and is drained by the Danube and its tributaries like the Drava, Sava, Tisza and Koros. The country is surrounded on all sides by mountains of the Alpine system. The climate is continental with hot summers, cold winters and light summer rainfall. This climate has made Hungary a grassland region, favourable to the growth of cereals.

The plain of Hungary has acted as one of the granaries of Europe for many centuries. Over 80 per cent. of the cultivated land is devoted to wheat and maize. Although Hungary is a large producer of wheat, the yield per acre is mediocre. In all great wheat-producing countries the average yield per acre is 30 bushels, but in Hungary it is never more than 20 bushels. The other important crops are rye, barley, oats, sugar-beet, potatoes, tobacco etc. More than two-thirds of the people is provided for by agriculture. Recently good progress has been made in vineyards and the country produces more than 100 million gallons of wine.

Sheep-rearing, once an important occupation, is declining. There is little mineral wealth. Coal of good quality is found near Pecs in the south-west which supplies nearly 7,000,000 tons of coal. Coal is required to be imported from Germany, Czechoslovakia and Poland. Some iron-ore is found at

Salgotarjen, but still a large consignment has to be imported to supply the needs of the metallurgical industry.

The industries are mainly those which are dependent on agriculture. These include flour-milling, sugar-refining and distilling. Budapest is the outstanding centre of flour-mills and is known as the "Minneapolis" of Europe. Cotton textile industry has been established recently. The other industries are tanning and engineering.

Hungary has about 60,000 km. of roads. These roads are quagmires of mud when it rains and of little use for modern transport. The rivers are all navigable and provide important means of transport. The great problem¹ is the difficulty of outlet to the sea. The outlet *via* the lower Danube necessitates passage through Rumania. Hamburg, though convenient for Hungarian trade, is far off, and its use entails crossing of other countries.*

In March, 1939, Hungary annexed Ruthenia (Carpatho-Ukraine) which was formerly a part of Czechoslovakia. Ruthenia is mountainous and its people are very poor. Sheep-rearing is the main occupation.

Budapest, the capital, is the chief manufacturing city. It consists of two towns and is situated on either side of the river Danube—Buda on the right and Pest on the left. It is the greatest flour-milling town in Europe. Electrical machinery is also made here. It is also an important railway junction, and the natural collecting centre of the plain. The population is a little above one million. *Szeged* is a village town. Sugar-refining, distilling and brewing are the industries of the place.

The Balkan States

Yugoslavia, Bulgaria, Albania and Greece, together with Turkey, are known as the Balkan States. These states are mostly mountainous. Commerce is negligible. Agriculture and animal-rearing are the two main occupations of the people.

* A serious drawback is the lack of direct outlet to the sea. Hamburg, Fiume and Split—all outside Hungary—handle the foreign trade of the country.

Bulgaria

Bulgaria lies to the south of the lower Danube and occupies the eastern part of the Balkan Peninsula. It is bounded by the Danube on the north, Greece on the south, the Black Sea on the east and Yugoslavia on the west. It has an area of 40,000 square miles and a population of five millions and a half. The Bulgarian people are of mixed Slav and Mongol origin.

This country has a great diversity of relief, soil and climate. The climate is, on the whole, of the continental type. In the south the Mediterranean climate prevails. Nearly the whole of the northern half of the country is a highland region. The extreme northern area is a lowland region. The most fertile and productive lowland of the country lies to the south of the Balkan mountains. This area is drained by the river Maritza. The Rhodope mountains cover the whole of the southern and western regions of the country.

Bulgaria is one of the poorest and most backward countries of Europe. It possesses considerable mineral wealth. Deposits of copper, manganese, coal, lead, zinc, marble and granite exist. But the lack of fuel, inadequate railways and poor capital are responsible for the absence of mining industry. Only a little coal and copper are mined by some foreign companies.

Oak, beech and other deciduous trees, which are extensively found in the mountainous parts of the country, provide timber for export. The production of silk cocoons is an important industry.

Agriculture is the main occupation of the people. More than 80 per cent. of the people depends directly on agriculture. Wheat, maize, barley, tobacco, sugar-beet, vines and fruits are important. In the valley of the south-west fruits grow in abundance. Cotton and oats are also grown. The cultivation of roses for the manufacture of scent is followed on the hill slopes of the Balkan mountains. The vale of Kazanlik is one of the most important rose-growing areas. Attar of rose distilled from the blooms once formed an important and valuable article of export. A small quantity is still produced. Pastoral occupations are also important.

The railways are not greatly developed. They radiate from Belgrade—one to Budapest on the north and another to Salonika

on the south. The sea outlets: (i) Sofia to Varna, on the Black Sea, along the northern side of the Balkan mountains; (ii) Philippopolis to Burgas, on the Black Sea, along the southern side of the Balkan mountains; (iii) Maritza Valley to Dede Agach, the nearest port to Bulgaria.

The country has relatively little foreign trade. Tobacco, maize, *attar* of roses and eggs are the chief exports.

<i>Exports</i>			<i>Imports</i>		
Live animals	..	39 p.c.	Manufactures	..	61.7 p.c.
Food	..	40.3 p.c.	Raw materials	..	43.3 p.c.
Raw materials	..	52.3 p.c.	Food	..	4.0 p.c.
Manufactures	..	3.5 p.c.			

The principal trade centres are *Burgas*, *Varna*, *Sofia* and *Philippopolis*. Varna and Burgas, on the Black Sea, export tobacco, eggs, *attar* of roses, maize and silk. During winter the traffic is not considerable in view of the fact that the Danube becomes ice-bound. The capital of Bulgaria is *Sofia*. It is the largest town in the country with a population of 280,000.

Albania

This small and rugged country is the poorest and most backward region in the Balkans. The area of the country is about 11,000 square miles. It is situated on the Adriatic, between Yugoslavia and Greece. Excepting the coastal area, the country is mountainous. It has a population of about a million—mostly Muslims. The people are primarily pastoral. They are a brave but revengeful people. The coastal plains have a Mediterranean climate where fruits and cereals are grown. There are no railways in the country; roads are inadequate and large areas of the country are waste lands.

"The position of Albania opposite and close to the heel of Italy gives the country a strategic importance at the entrance of the Adriatic Sea."

The extent of mineral resources of Albania is still unknown. A petroleum field has been discovered and it was being worked by the Italians. *Tirandë*, the capital, is centrally situated just on the inland edge of the main coastal plain. Its population is

a little over 30,000. *Scutari* is the largest town and stands on the plain surrounding Lake Scutari. It is noted for melons. *Durazzo* is the chief port.

Greece

Greece is the most easterly mountainous peninsula stretching southward into the Mediterranean, together with Crete and numerous islands in the Ægean and Ionian Seas. It is a mountainous country. The peninsula is so broken and indented that the inhabitants have always been primarily sailors and traders. No part of the country is more than 80 miles away from the sea. The climate is typically Mediterranean, but Greece suffers from a rather low rainfall which makes cultivation difficult for lack of water for irrigation.

There are three natural divisions in Greece—(a) The Peninsula, (b) The Macedonian coast-lands, (c) The islands.

The Peninsula is entirely mountainous. Coast-lands are lowland areas. The main occupation of the people of this area is the rearing of sheep and cattle. Greece has more goats per square mile than any other country in the world. In the coastal lowlands of the Peninsula, the Mediterranean crops are raised. Along the western coast of Morea, in southern Peninsula, grapes are extensively cultivated. These are dried and exported as currants. *Greece is the leading exporter of currants in the world.* Sometimes the production is so great that it becomes necessary by law to restrict the cultivation of grapes.

The Macedonian coast-lands are fertile, and, therefore, important for agriculture. Wheat, cotton, rice, olives and grapes are grown. In Eastern Macedonia the soil and climate are peculiarly suitable for producing the best tobacco leaf.

Although Greece is an agricultural country, only one-fifth of the total area can be cultivated. Methods of cultivation are primitive and yields per acre poor.

Mineral resources are extensive and varied, but these are not fully exploited. The chief minerals are salt, lead, marble and iron-ore. Zinc, copper, silver and antimony are also found. In the present War the magnesite and chromium mines of Greece proved to be a great asset to Germany, which suffers from an acute shortage of these minerals, so vital for armaments.

Manufacturing industries are little developed. Industries include woollen and cotton weaving and spinning, the production of wine, olive oil and chemical products. Cigars and cigarettes are also manufactured. Wine and fruits are exported in large quantities. As the country is not self-sufficient, she must exchange her wine and fruits for food supplies.

There are now more than 1,500 miles of railways which are all confined to the eastern part of the country. They are absent in the north-western side of the peninsula. Roads are bad and inadequate. Rivers are short and swift-flowing and are of little use for navigation.

As every important town is on the sea, the Greeks are essentially a maritime people. The prosperity of Greece depends on sea commerce. Greece is not self-sufficient in food, and much is to be imported by sea from the south. Sea commerce is, therefore, of vital importance to Greece.

Athens, the capital, has been a famous city for about three thousand years. It has a population of 400,000. Its chief port is the *Pnaeus*. *Salonika* is the most important trade centre of Greece. It is also one of the chief ports of southern Europe. It stands on the Gulf of Thessalonika. It is connected by railways with the important towns of the Balkans. It exports grain, animal products and tobacco, and imports textiles and iron goods. Other important trade centres are *Larissa*, *Stavros*, *Alexandropolis*, *Kalabaka* and *Katakolon*.

The Greek islands—(a) *Crete*—It is a long, narrow, mountainous island and stands across the mouth of the *Ægean* Sea. The climate is warm and wet. Agriculture is the main occupation of the people. Wine and oil are exported.

(b) *Ionian islands*.—The group lies off the west coast of Greece and includes small mountainous islands like *Corfu*, *Lavkas*, *Kephallonia*, *Ithaca*, *Zante* and *Kythera*. Fruits are important.

(c) *The Ægean islands*.—This group is mostly barren and produces a good deal of wine.

Yugoslavia

Yugoslavia occupies the southern portion of the plain of Hungary and the central and the north-west mountain regions

of the peninsula. Its official name is the Kingdom of the Serbs, Croats and Slovenes. After the Great War of 1914—18, Serbia and Montenegro, together with Bosnia, Dalmatia and Croatia, which were formerly parts of the Austrian Empire, were united to form the Kingdom of Yugoslavia. The word 'Yugoslav' means Southern Slav. The area is about 96,000 square miles and it contains a population of some 14 millions.

A large portion of the country is mountainous: the highlands in the east are part of the Balkan heights, those in the west form the Dinaric Alps. The Dinaric Alps are composed of lime-stones. Low lands are found along the Adriatic coast and on the north-east, which is a continuation of the Hungarian plain.

There is a paucity of good cultivable land because of the mountainous character of the relief. At the best, not over one-fourth of the land can be cultivated. Wheat, maize, tobacco, rice, etc. are the principal agricultural crops. The methods of farming are crude and the yield per acre is always small. Eighty per cent. of the people are agriculturists. The great majority of the people are, therefore, poor.

Grazing and stock-raising are the mainstay of thousands of people in Yugoslavia. Cattle, sheep, goats and pigs are reared in the eastern part of the country. The country has considerable mineral resources including coal, iron, copper and lead; but they are as yet little developed. Forest produce is an important source of income. About a third of Yugoslavia is clad with forests of oak, beech and pine.

The roads and railways of the country are in a lamentable condition. Yugoslavia has only a little over 10,000 km. of railways in an area of 2,49,000 square km. The railways belong to the state. The principal railway centre is Belgrade, which is connected with Istanbul in the south-east and Budapest in the north. It is also connected with Salonika in the south. The length of roads in Yugoslavia is 40,000 km.; this represents 2·25 km. per 1,000 of population.

With the exception of flour-milling and brewing, the country has practically no other manufacturing industry. The industrial and commercial backwardness of the country is due to a combination of factors, *e.g.*, (i) want of coal, (ii) inadequate

means of communication, (iii) mountainous character of the relief, and (iv) weak government. But the future possibilities of the country are great. Timber, maize, pigs, eggs, meat and cattle are the leading exports. The imports consist of machinery, textiles, iron goods and food-stuffs.

Belgrade is the capital of Yugoslavia and contains a population of 2,40,000. It is situated in the fertile interior plains at the confluence of the Danube and the Save. It is also the principal railway centre. *Zagreb* is the chief manufacturing centre of the country. It is situated on the Save and has a population of 185,000. It is connected by railways with Belgrade, Split and Fiume. *Split* is situated on the Adriatic coastlands and is a very important port. *Kotor* and *Susak* are two other ports. *Fiume*, though under Italy, is the natural outlet for the north-west of Yugoslavia.

Turkey in Europe

European Turkey is about half the size of Scotland, and lies between the river Maritza and the Black Sea. The Straits of Bosphorus and the Dardanelles, and the Sea of Marmora separate it from Asiatic Turkey. Its area is only 11,000 square miles and it contains nearly two million people. The situation of Turkey is of immense political and strategic importance, for it provides a route from Russia to the Mediterranean.

During the seventeenth century the Turkish Empire in Europe included the whole of the Balkan peninsula, Rumania and Hungary. Towards the close of that century the power of the Turks began to decline. The Empire was broken to pieces after the last Great War, and to-day European Turkey is but a slice of the Turkish Republic which has its centre in Asia.

The northern and southern sides of Turkey in Europe are bounded by hills, while the east is a plain. Agriculture and sheep-rearing are the two main occupations. The people are conservative and poor.

Istanbul (Constantinople) is the largest town of the Republic. It occupies a very important position "where the shipping routes between the Mediterranean and the Black Sea are crossed by the land route between Europe and Asia Minor."

Its importance has declined a great deal since it is no longer the capital of Turkey. The population of Istanbul exceeds 500,000.

Gelibolu (Gallipoli) is a natural naval station, guarding the Dardanelles.

The Netherlands*

The Netherlands is one of the smallest of European countries. It has an area of 12,579 square miles with eight million people. The density of population is 687 per square mile, being second highest in Europe. It is a lowland country and one-fourth of the land is actually below sea-level. Its highest point is under 350 feet above sea level. About forty per cent. of Holland consists of reclaimed land. Embankments or dikes have been constructed around the low-lying areas of the coast. Polderland or the reclaimed land is very valuable for agriculture. Before the present War a new project for the reclamation of part of the *Zuider Zee* was under way. This reclamation project was calculated to make available over 8,000 square miles of polders.

The density of population is very great,—more than 659 per square mile. In respect of density per square mile Holland ranks fourth in the world.

The main drainage of the country consists of the rivers, *Waal*, *Lek* and *Yessel*. The coast-line is greatly indented.

* It is generally and wrongly called Holland, for *Noord* (North) and *Zuid* (South) Holland are only two of its eleven provinces

THE DUTCH EMPIRE

Unit	Area in square miles (000 omitted)	Population (000 omitted)
Netherlands	13 2	8,475
Colonies—		
Netherland Indies	733 7	60,731
Dutch Guiana (South America) ..	54.3	166
Curacao (West Indies)	0 4	87
Dutch Empire	801 6	69,459

The character of both the coast and the surface has made the Dutch essentially a commercial people. The Dutch migrated to the different parts of the world and acquired rich tropical colonies. Three centuries ago Holland was considered a principal maritime power.

The climate is generally maritime and can be compared with that of eastern England.

Agriculture is highly intensive and more than seventy per cent. of the land is under cultivation. The principal agricultural crops are oats, rye, wheat, barley, flax, sugar-beet and potatoes.

The alluvial origin of the soil accounts to a large extent for the absence of minerals in the country. A little coal is found at Limburg in southern Holland

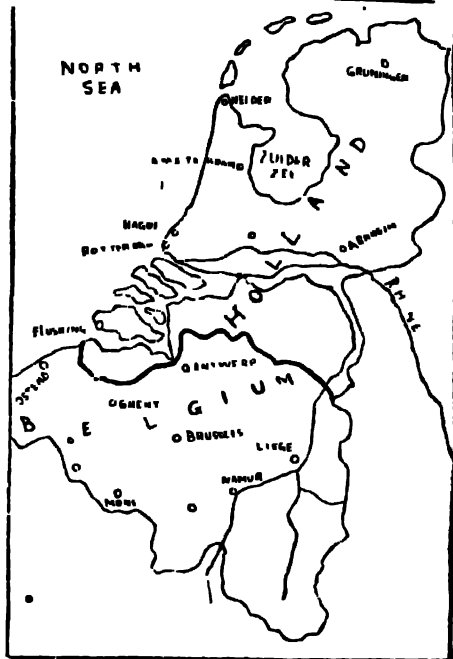


FIG. No. 50 The Netherlands and Belgium with their trade centres and ports.

The industries of Holland are those which (a) require less raw materials or fuel but much skill, (b) are the direct outcome of agriculture, and (c) are based on colonial imports.

The outstanding industry is dairying and the manufacture of milk products. The fertility of the soil, combined with the humidity of the climate, makes the country an ideal region for dairying. *The Netherlands has more cattle per square mile than any other country in the world.* Cheese, butter, condensed and powdered milk are extensively made. The development of dairying has led to the neglect of home production of cereals for food. At present there is a large import of bread food for the people and cake for cattle. The Dutch depend to a large extent for their prosperity on dairy industries.

The other industries are fishing, chocolate and tobacco manufacturing and diamond cutting. The flat surface of the country below the sea-level makes it convenient to use wind-power in mills and factories.

Because of the level surface transport is easy in all directions. Water-transport is everywhere more important than transport by rail or road. Holland has more than four thousand miles of waterways provided by the rivers and canals.

The country has a large entrepot trade. Its mercantile marine ranks eighth in the world. The principal exports are condensed milk, cheese, butter, etc. and imports consist of coal, textiles, machinery, etc. Holland's chief purveyor is Germany, which provides more than 25 per cent. of the total imports, while her chief customers are the United Kingdom and Germany. Other important trade partners are her neighbour Belgium, the United States, the Argentine (as an importer only) and the East Indies.

Amsterdam, the largest city, is the capital of the kingdom. It is situated on the west side of Zuider Zee and is linked with North Sea by a canal. The city has a large trade with East Indies and imports rubber, cocoa, tin, rice, spices, tobacco, copra, etc. It is famous for diamond cutting and polishing.

Rotterdam is the principal port of Holland. It is situated on a distributory of the Rhine and is connected with the sea at the Hook of Holland by a canal known as the "New-waterway". It is the natural outlet of the Rhine basin. The port handles three-quarters of the Dutch trade. The principal exports are flax, linen, dairy produce and cattle. The imports include rice, sugar, indigo, coal and petroleum. Rotterdam has a large trade with Germany and East Indies. *The Hague* is the seat of the Government. Its principal industry is pottery. It is a city of great international importance. The other centres are *Utrecht*, *Haarlem* and *Flushing*.

Belgium

Belgium is one of the smallest states of Europe. It lies between Holland and France, and has warm summer and cold winter.

Northern Belgium is a plain and consists of coastal lands. The coast of Belgium is about 40 miles long and is regular.

A region of about 10 miles wide immediately to the south of the sandy shore is "polder" land (reclaimed marshland) which has become famous for agriculture. Flanders in Northern Belgium is a region of plains with low hills. It has the largest proportion of cattle in Belgium and various industries have developed here. *Central Belgium* is an extension of the fertile plains and coal-fields of Northern France. This area includes the basin of Scheldt and the Campine region near the Dutch frontier. Central Belgium is a great agricultural region ; mining centres are also growing. *Southern Belgium* is formed of the highlands of the Ardennes which continue into Luxemburg.

Belgium is an extremely densely populated country. The population exceeds 8 millions. The population density per square mile is the highest in Europe, being 712. In Flanders in the north, the density is as high as 990 per square mile. To ensure a high standard of living for such a dense population the country was forced to become industrialised in the middle of the nineteenth century. Its various industries are favoured by mineral deposits and by extraordinary facilities for commerce—both foreign and internal. The facility for commerce is great as the country lies near the focus of great ocean trades and touches three leading commercial nations—France, Germany and Holland, and is close to England. It is situated near the mouth of the Rhine, the chief commercial river of the continent.

Agriculture in Belgium is scientific and intensive, but production falls short of demand. Dairying is important in the farm-economy of the country. The country has considerable mineral wealth like coal, iron and zinc. Coal is found in proximity with iron-ore in the north-west of the country, where a great iron and steel industry has developed. The chief centres of the industry are Mons, Charleroi, Namur and Verviers. During recent years a few coal-fields have been discovered in the north-east of the Lys basin. In the production of zinc, Belgium ranks third after the U. S. A. and Canada. Owing to the mining richness of her colonies, Belgium also obtains considerable quantities of copper, lead and tin.

Belgium is a great manufacturing country. It emerged from the World War II with little major damage to its industry. In 1947, the industrial output was 93 per cent of the pre-war level.

BELGIAN PRODUCTION (000 metric tons)

	1936-38	1947		1936-38	1947
Cast Iron	.. 261	235	Steel	.. 204	211
			Cement	.. 250	217
Pig Iron	.. 253	235	Coal	.. 2425	2033

The recovery has been uneven as some of the industries are handicapped by shortage of skilled labour and use of obsolescent equipment. The textile industry plays an extremely important part in the industrial activity of the country. Its works include every known kind of textile fibre, like cotton, wool, flax, jute and rayon. The cotton industry is the most important branch of the Belgian textile industry by the number of its spindles and looms as well as the number of workers employed. The woollen industry is the oldest branch of the textile industry. Its centre has recently moved towards the eastern part of the country where water is found which possesses the special qualities for the washing of this textile. Ghent, Antwerp and Courtrai manufacture cotton goods and Verviers woollen goods. Linen manufacturing is very important in Ghent, Courtrai, Roulers and Tournai. The growth of this industry has been helped by the following factors. (i) the inherited skill of the weavers in spinning and weaving, (ii) large supplies of flax in central plains and (iii) supplies of coal from the Belgian coal-field. The Belgian steel production is about 2 per cent. of the world's production. The main groups of products from this industry are moulded steel, sheet iron, railway materials, ship building, automobiles, machine tools, metallic building accessories and so on.

The means of communication by land, air and rivers are excellent and serve commerce extensively. Situated at the cross roads of Western European nations, Belgium has a railway system of 6000 km. of railway tracks connecting the main points of the continent. Brussels is the centre of the railway system. The rivers are navigable and connected with one another by canals. The Belgian air line system has branches throughout Europe.

The country has a large trade with the neighbouring countries like France, Germany, Holland, England and Denmark. It has also trade relations with the U.S.A., Canada,

Argentina, Australia and Africa. The imports consist of in the order of their importance, grain, iron ore, mineral oil, wood, wool, cotton, copper, phosphate, coffee and other colonial produce. The chief exported goods are iron and steel products, coal and coke, chemicals, manures and so on.

Brussels is the capital and is situated on the River Senne. Its excellent situation—halfway between the coal-field and the sea—has made it a great trade centre. Lace, carpet, furniture and paper are made. It is connected with Antwerp by a canal and railway.

Antwerp, at the Scheldt estuary, is the greatest port of Belgium. It has a large entrepot trade and competes with Hamburg and Rotterdam. Its hinterland includes part of Eastern France, the Rhine valley and the Ruhr valley, in addition to Belgium proper. It is also a great industrial centre. *Liège* is situated in the heart of the Belgian coal-field. It is noted for chemicals, glasses and metal works. *Ghent* is the great linen-manufacturing centre. *Leuven*, in the Southern Highlands, is noted for woollen goods.

The principal exports of Belgium are iron and steel, glass, cotton goods, zinc manufactures and cement.

EXPORT IN P.C. OF TOTAL VALUE (1947)			IMPORT IN P.C. OF TOTAL VALUE (1947)		
Manufactures	..	54	Food-stuffs	..	21
Raw materials	..	39	Raw materials	..	49
Food-stuffs	..	6	Manufactures	..	28

Luxemburg is the smallest independent state in Europe. It has an area of 999 square miles with 295,000 inhabitants. Most of the people of Northern Luxemburg are engaged in agricultural and pastoral occupations. Southern Luxemburg is famous for its iron deposits. It produces annually 3 million tons of iron and 2,500,000 tons of steel. The products are mostly exported to Germany and France. Commercially, it has been united to Belgium since 1921.

Denmark

Denmark has an area of about 17,000 square miles and lies seventy miles south from the coast of Norway. Its area is

one-tenth the size of Sweden and one-eighth that of Norway. It consists of the north-pointing peninsula of Jutland and many islands of which Funen, Zealand and Laaland are the principal ones. Jutland takes up two-third of the area of the country. The country has plains and low hills ; no part of the country has an elevation of more than 550 feet. The situation of the country is particularly important as it controls the natural routes between the North Sea and the Baltic Sea. The west coast of Denmark is a line of dunes with sandy beaches and much surf and therefore this part of the country is very sparsely populated. But the Baltic side is fertile and more people live here. The total population of Denmark was 5 millions in 1945.

The resources of Denmark are limited. It has no minerals except the Kaolin which is used for the manufacture of pottery. The rivers are not important either for navigation or for developing hydro-electricity. It has no lumbering industry as agriculture has displaced the forests which at one time, covered a great part of the country and has made Denmark one of the countries in Europe most deficient in forests.

Denmark has always been an agricultural country. At one time it was a great producer and exporter of wheat ; but after 1870 the importation of American wheat into Europe greatly curbed this activity and caused the Danish peasants to abandon agriculture for stock-raising. The agricultural area represents 75 per cent of the total area. The grains and other crops are grown for the live stock production. About 88 per cent of the harvest is used for feeding cattle, horses, pigs and fowls.

Denmark is the pre-eminent dairy-farming country of the world. The keeping of milch cows and the milk production is the backbone of Danish agricultural industry. So far it is the key industry for the economy of the community ; and through this the economic exchange of goods with other countries is made. The following factors have given Denmark its pre-eminence as a dairying country : (i) The absence of resources to form the basis of a great manufacturing industry. The country has no coal, no iron, no water-power and no raw materials. (ii) Its climate favours the production of grass and root crops. (iii) "Most of the farms are small so that each family must obtain a large yield from a small area of land." (iv) "Denmark has perfected the system of the utilization of

arable land to produce foodstuffs for cattle ; by this method more cattle can be kept than on the same area of pasture and meadow-land." But *Denmark's success in dairy-farming is mainly due to co-operation*. 88 per cent. of the dairymen belong to co-operative societies, and 92 per cent. of milk is handled by the same association. The aim of the co-operative dairies of Denmark has been to produce a standard quality good enough to gain the confidence of the buyers. The Government also maintains a strict system of inspection both of the farms and of the export products. At present there are nearly 9,000 co-operative societies in the country. Eighty per cent. of milk is used for making butter and ten per cent. for cheese and condensed milk, the rest is consumed locally. The dairy produce accounts for 76 per cent. of the value of Danish exports. More than two-thirds go to England. Seventeen per cent. of Danish exports and 28 per cent. of imports are shared by Germany.

EXPORTS IN 1938, IN METRIC TONS

Dairy-produce	480 7	(the bulk to U.K.)
Vegetable-oil products , .	214 0	
Cement and Chalk	273 1	
Fish	43 1	
Live animals	131	thousand head (mostly to Germany)
Eggs	1,070	thousands (70 p.c. to U.K.)

IMPORTS IN 1938, IN METRIC TONS

Breads	622·2
Cattle foods	1,467 6
Fruit, drink, sugar	62·1
Pulp and paper	100 9
Chemicals	358 4
Metal goods	281·1
Textile materials	19·2
Manufactured textiles	22·1
Mineral oils	588·4
Coal and Coke	4,907·5

Fishing industry and a large mercantile marine have developed because of the ideal situation of the country. But the prosperity of Denmark will always depend on the ability of supplying provisions to the industrial areas of Western Europe.

Copenhagen is the largest city in the country. It is situated on the east coast of Zealand and contains nearly one-fifth of the population of Denmark. It stands at a crossing place of land and sea-routes. The opening of the Kiel canal has affected its trade adversely. Copenhagen is an entrepot for the products that the Baltic lands buy or sell. Textiles, boots and shoes, beer and pottery are the important products. *Esbjerg* is situated on the west coast of Jutland and is an important fishing centre. *Aarhus* and *Odense* are the two other largest towns on the eastern side of the country.

Scandinavia

The Scandinavian peninsula is the largest in Europe and contains Norway and Sweden.

NORWAY is a long narrow country forming the western portion of the Scandinavian peninsula with an area of 125,000

square miles. In spite of its northerly position the coasts of Norway are always ice-free. It is because the warm surface water is drifted across the Atlantic Ocean against the whole Norwegian coast. The coast-line is extensively indented with fjords and fringed with a large number of rocky islands. The fjords—long, narrow, steep-sided indentations—are drowned valleys. At many places fjords sides rise almost perpendicularly from the sea for several hundred feet. The

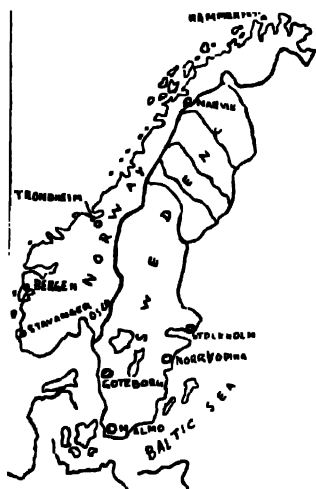


FIG. No 51. Scandinavia

streams form magnificent waterfalls.

More than two-thirds of the country is entirely unproductive. Lakes and rivers occupy 5,111 square miles more and

the forests include 26,000 square miles. Only 3·6 per cent. of the total area of Norway is under cultivation.

The population of the kingdom is nearly three millions (2,814,000) and the average density of population is 23 per square mile. The south-eastern part of the country is densely populated. The major occupations of the people are concerned with agriculture, fishery, forestry and manufacture.

Cultivation is limited to the sheltered lowlands of the south-east. In spite of this limitation more than 31 per cent. of the population depends on farming, the greatest single industry in the country. Wheat, oats, barley, rye and potatoes are the chief crops. In recent years dairying has developed considerably. More and more the farmers are giving up the growing of cereals for dairying and already some dairy products are being exported.

Fishing is a very important industry of the country. The principal catches are cod and herring. "The greatly indented coast with its long line of protecting islands provides numberless harbours for the fishermen, and good spawning grounds for the fish." Cod is found round the Lofoten islands and Finnmark in the north, while in the south of Stavanger and Haugesund herring is abundant. The catches find a ready market in those European countries which have no fisheries. Cod-liver oil and other fish oils have a world market. Stavanger engages in canning fish for the export market, *Kristiansund* is the centre for the dried cod; *Bergen* is the chief fishing port. *Hammerfest* and *Tromsø* are the centres for northern fisheries.

Although forests cover nearly one-fourth of the total area, the most important region is situated in the south-east. The forest products are very important and constitute about one-third of the total exports. "Large quantities of timber are used in Norway for building and for fuel, but there remains a large surplus. This was formerly exported as lumber, but to-day Norway does not supply much wood to other countries but uses it as the basis of manufacturing industries, such as the manufacture of wood-pulp and paper."

Mineral wealth is not inconsiderable. Iron-ore, copper and silver are the chief minerals. Coal is practically absent.

Spitsbergen in the Arctic has certain coal mines. Iron ore is found in the far north on the border of Finland. The old rocks of the mountains contain fine granite.

"The country has developed shipping greatly and the Norwegians are among the great shippers of the world." Norway's merchant marine ranks fifth in the world and consists chiefly of tramp steamers. "The geographical position of Norway, its numerous good harbours, the facilities for building wooden ships, the ease by water and difficulty by land with which communication is carried on, the exportation of timber and fish and the importation of coal, cereals and manufactured goods, have all contributed to the growth of Norwegian shipping."

Industries in Norway are mainly based on raw materials raised within the country and on water-power. Norway offers unique opportunities for the development of hydro-electric power. There are many waterfalls and rivers are swift-flowing and do not freeze in winter. Wood-pulp, paper and matches are manufactured with the help of hydro-electricity.

Many people from the different parts of the world come to visit the scenery of Norway and the money spent by these visitors is a considerable source of income to the country.

The mountainous nature of the land and the great distances from north to south are responsible for the meagre development of the means of communications. The roads and railways are mostly confined to the south-east of the country. Most of the foreign trade is carried on with the European countries. Timber, paper, fish, matches, dairy produce and tinned provisions are the chief exports. The imports include rye, flour, coal, machinery, sugar, coffee and barley.

Oslo is the capital and has 250,000 people. It is situated at the head of *long fjords* in the south-eastern lowland of Norway. It is connected by railways with Bergen and Trondhjem. *Bergen*, the second largest town, exports large quantities of fish to the European countries. *Trondhjem*, the northerly railway centre, exports herring fish. It was the ancient capital of Norway. *Narvik* is an important port of Norway in the Arctic Ocean. It is connected with the Swedish railway system. During winter the iron-ore of Sweden is sent

to Narvik by railway as the Gulf of Bothnia is ice-bound at this time.

SWEDEN occupies the eastern portion of the Scandinavian peninsula. Most of its coast-line faces the Baltic which is frozen during the winter months ; the coast-line is not much indented. The climate is continental. Plains and lowlands cover the southern side, while the north is mountainous.

The area of Sweden is 173,000 square miles ; over half of it is forested. Although it is smaller than Norway in size, the area of its productive land is greater.

Sweden presents four distinct geographical divisions :

- (i) Norrland,
- (ii) The lake district,
- (iii) The plateau of Smaland,
- (iv) Scania.

Norrland is the northern part of Sweden and represents about 60 p.c. of the total area of the country. It is a region of very recent colonisation. Immediately to the south of Norrland is a lowland, the *lake district*, which is highly developed both agriculturally and industrially. *Smaland* occupies the central area of Southern Sweden. • It is an area of forests, swamps and moorlands, and the population is very sparse. The extreme south-west of Sweden, known as *Scania*, is the richest agricultural region in the country.

The mineral wealth is considerable. The iron deposits of Sweden are the most famous in the world for quality. High grade iron-ores exist at Kiruna and Gellivara in Northern Sweden. Almost the entire production is sent to Germany and England : 33 per cent. *via* Narvik and 65 per cent. by way of Lulea.* It must be noted that Sweden raises only 5 p.c. of the world's total iron-ore.

The country is poor in coal. Recently great progress has been made in water-power. The greatest hydro-electric power station is situated at Porjus, which supplies power to railways and industries. Copper, silver, lead, zinc and sulphur are also found. The gold deposit at Boliden (in Norrland) yields some 2 per cent. of the world's output.

* During the winter months, when the Baltic is frozen, ores are exported through Narvik in Norway. Narvik is connected with the Swedish railways.

In no other country of the world are forests so important for national prosperity as in Sweden. Forests and the existence of sulphur within easy reach give Sweden a prominent place in the match-making industry. *Jonköping* in Smaland is a great centre for the manufacture of matches, which are produced in immense quantities, and exported to every part of the world.

Only 9 per cent. of the land is under cultivation. The Scania peninsula raises wheat, barley and rye. Sugar beet is also cultivated. The country is more or less self-sufficient.

Nearly half a million people are engaged in industries. Mining, lumbering and paper-making are the principal industries. The chief exports are paper and paper-pulp, logs and lumber, metal and ores. The imports include coal, textile goods, food-stuffs and machinery. Sweden receives most of her imports from Germany, and sends most of her exports to the United Kingdom.

Stockholm is the capital of Sweden and contains 500,000 people. It is a great industrial and railway centre. Located as it is on the eastern side of Sweden, it is away from the main trading routes. Moreover, access to Russia is hindered during winter as the Gulf of Finland is ice-bound. *Goteborg* is the great trading centre of the country. It is situated on the west of southern Sweden. It is ice-free and has excellent canal and railway communications with all parts of southern Sweden.

Iberian Peninsula

The Iberian Peninsula, which includes Spain and Portugal, is situated on the south-western side of Europe. Its position is admirable for commerce, but the character of the coast and the shore water have retarded the development. The coast is very regular with few harbours, and the sea currents are violent, making it almost impossible to construct harbours.

SPAIN. It is a backward country in commerce and industry. The excellent situation for commerce, the high fertility of the land and the vast mineral resources are of no use at present to the country because of certain drawbacks.

- (i) Although her iron-deposits are vast, she lacks the fuel to establish her iron industry.

- (ii) Her harbour accommodations are inadequate for shipping. Due to the character of the coast-line, sheltered harbours are practically absent.
- (iii) The country is mountainous ; the difficulty of building roads and railways is considerable. Rivers are swift and have rapids and falls.
- (iv) The climate, though Mediterranean, is not generally conducive to health and efficiency.
- (v) Large estates are owned by the aristocracy, and the common people are very poor.
- (vi) Absence of trade organisations¹ accounts for the decline of export trade in wheat and wool. At one time Spain was a large exporter of these materials.

Spain is essentially an agricultural country. The amount of land devoted to agriculture is less than 40 per cent. of the total area, and only 7 per cent. of the cultivated land is irrigated. Further progress in irrigation works is necessary. Now that internal disturbances are almost over, the Government has initiated programme for agricultural development.

Nearly one-fourth of the population is engaged in agriculture. Wheat, rice and fruits are extensively raised. Spain ranks first in the world in the production of olive oil and cork, and in the exportation of oranges. Pastoral industry is also important. Cattle, sheep, horses and pigs are reared. Spain has always been famous for the wool of its merino sheep.

In no other country in Europe is the mineral wealth so varied and widely distributed as in Spain. Iron-ore, manganese, zinc, lead, coal, copper, mercury, silver, etc. are found. *It ranks first in Europe in the production of lead and copper, second in mercury and silver, and among the first in zinc, manganese, and iron.* Spain provides about 40 per cent of the world's output of mercury. Hydro-electric power has been developed in the Pyrenees.

The means of communication are very inadequate. There are only 9,000 miles of rail-roads, while Belgium has 6,000 miles on an area one-sixteenth as large. Rivers are useless for navigation, nor are they utilised for irrigation.

Spain is the third largest wine-producing country in the world. The chief manufactures are textiles, wine, hides and skins, dairy produce etc..

The principal exports are fruit, iron, cork, wool and esparto grass. The imports include machinery, textile goods and food products.

Madrid, the capital, has a population of nearly 1 million. It is the principal railway centre. *Barcelona*, on the Mediterranean coast, is the largest city and the premier port of Spain. It is a great industrial centre. The other trade centres are Valencia, Malaga, Bilbao and Cadiz.

PORTUGAL is a small maritime country on the west of Spain, with a population of nearly 10 millions. The climate is mild and moist. The soil is fertile. The country forms a natural outlet for the Atlantic trade of Spain. The main industry of the country is agriculture and 60 per cent of the inhabitants are engaged in it. Lemons, figs, oranges, apples, almond, dates and nuts are extensively grown. Wine is made throughout the country.

The country is rich in minerals. Iron-ore is considerable. Tin and wolfram are worked with foreign capital, the deposits of wolfram being the most important in Europe. Copper, lead and salt are also obtained in large quantities.

The forests of Portugal are specially important for oak from which cork is obtained. Lack of fuel is responsible for her slow progress in industries. The country has negligible quantities of coal and the development of hydro-electric power is equally meagre. The manufacturing industries are mostly those connected with the preparation of products obtained from vine and olives. There are also considerable woollen, cotton and linen industries. *A characteristic occupation of the Portuguese is the manufacture of porcelain tiles, an industry inherited from the Moors.* Cork is exported enormously from the country.

Lisbon is the capital and chief port. It has a magnificent harbour. It is connected by rail with Madrid and Oporto. Agricultural products are exported and manufactured goods are imported through Lisbon. *Oporto* is the chief port through which wine is exported.

Great Britain

Great Britain is the most highly industrialised country in the world. The commercial and industrial development of Great Britain was remarkable from the latter half of the nineteenth century. She was the leader in engineering development, the pioneer in railways, and the inventor of a great number of industrial processes. By 1900 Great Britain alone accounted for about one-fifth of the total world trade, while Great Britain and the Empire together accounted for nearly one-third. *She possesses certain natural and physical advantages which have greatly contributed towards the remarkable growth of her commerce.*

The climate of the British Isles, on the whole, is mild and equable. The mildness of winter causes little or no interruption to agriculture, and its comparative freedom from heavy snow-fall causes little interruption of communication. "The climate is neither so hot nor so cold as to prevent people from working either in field or factory throughout the year. The British capacity for regular routine work, so necessary in the manufacturing industries, is partly the result of climatic conditions."

The coast-line of Great Britain is broken up by numerous inlets, so that no part of the country is more than 70 miles from navigable water or more than 100 miles from the sea. The British Isles have one mile of coast for every twenty miles of area. The nearness of the coast, on both sides, places a manufacturing region within easy reach of many markets.

The situation of the country is very important. The English Channel has separated the country from the Continent. The United Kingdom is on the one hand very near to Europe for the purpose of commerce, and, on the other hand, it is too far away from Europe to be invaded easily by land or sea, although it does not enjoy equal immunity from aerial attacks. The country is, moreover, centrally situated—no part of the world is far from her. The great industrial countries of the Continent—Germany, France and Belgium—face her eastern and southern coast; while the U. S. A. can be easily approached by the Atlantic Ocean. Another advantage of the situation of the British Isles in shallow seas on the European continental shelf is that it gives the benefit of high tides in flooding the

harbours, keeping them free from silt and waste and in bringing ships far up the estuaries.

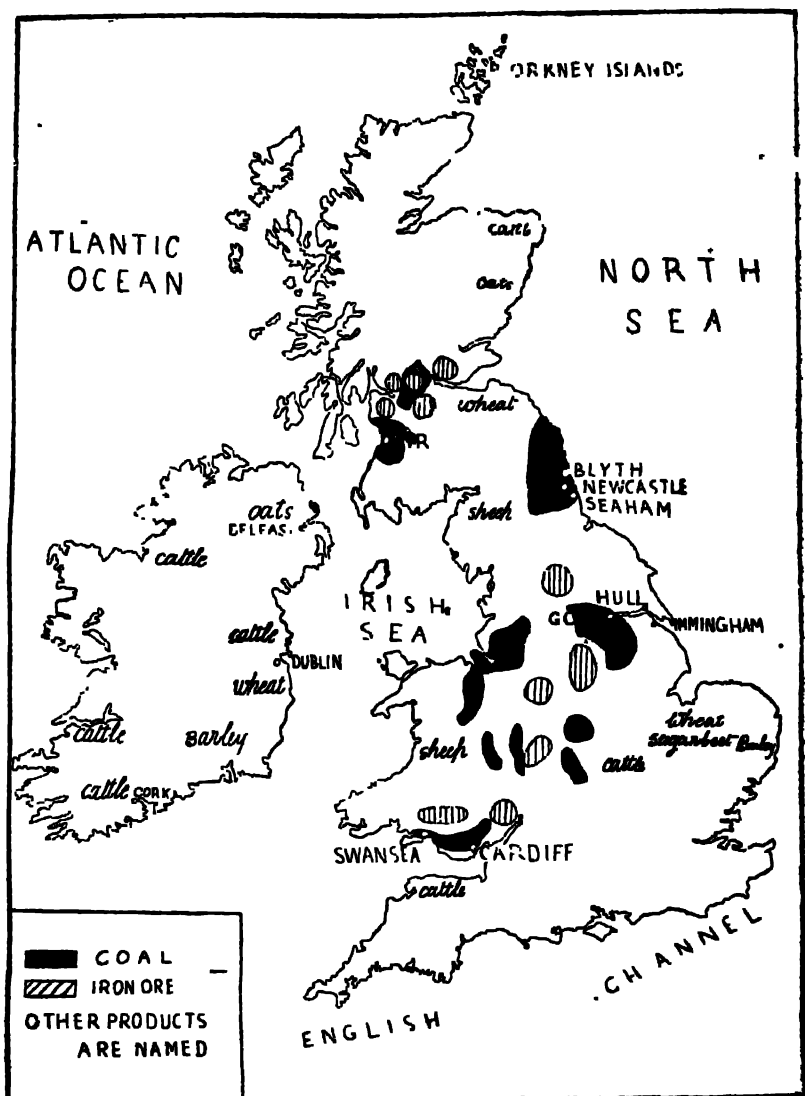


FIG. No. 52. Economic products of the British Isles.

The country is very fortunate in having large deposits of coal and iron. Coal is of superior quality and is found close to iron-fields. All the principal industries of Great Britain are

more or less localised near the coal-fields. Chalk, slate, tin and clay are also found in small quantities. The rivers of the United Kingdom are of little use for navigation ; but their estuaries are always important for shipping.

The rapid commercial and industrial progress is also due to economic and human factors. (1) The essential political stability of the country's democratic parliamentary Government made industrial progress rapid. (2) The temperament, character and industry of her people are the real strength. The industrial output per head of her population is one of the highest in the world. Great Britain is even today the traditional home of outstanding technical achievement. Because of the industrial skill of her people, she enjoys world-wide reputation in the matter of superiority of design in textiles, pottery, aero-engines and ships; (3) Internal communication is perfect. Great Britain has 25,000 miles of railways which serve all the great ports of the country. The road system is also excellent, and motor-transport handles both passenger and goods traffic. The inland waterways are, however, not very important, and they carry about 4 per cent. of the traffic handled by the railways. In 1947 an Act was passed to set up in Britain a publicly owned system of inland transport. A Board has been established in January 1948 with general powers to carry goods and passengers by road, rail and inland waterways, to provide port facilities etc. and to extend and improve the system. The system which has thus passed into state control is now the greatest unified transport system in the world. The Board owns railways, 20,000 locomotives, 41,000 passenger vehicles, 1,235,000 wagons, 100 steamships and many thousand of motor vehicles. (4) Population is large in industrial areas. (5) Colonies and dependencies are extensive, which provide vast markets for the British goods. The British Common Wealth of Nations and Empire contain more than 24 per cent. of world population.* (6) Her mercan-

* They include : (i) Gibraltar, Malta, Gozo and Cyprus in Europe ; (ii) Port Said, Aden, Perim and Socotra Islands, Indian Union, Pakistan, Burma, Ceylon, Straits Settlements, Borneo, in Asia, (iii) Australia, New Zealand, a part of New Guinea, Fiji and Solomon Islands in Oceania, (iv) Zanzibar, Pemba, Kenya, Uganda, Tanganyika, the Sudan, Sierra Leone, the Gold Coast, Nigeria, Gambia, British South-West Africa, Mauritius, Union of South Africa, Rhodesia, Bechuanaland, Basutoland, Swaziland, Nyasaland, etc., in Africa ; (v) Canada, Newfoundland, Labrador, the Bermudas, Jamaica, the Bahamas, British Guiana, Trinidad, Falkland Islands, etc., in America.

tile marine is the biggest in the world. (7) English language has spread throughout the globe. In addition to these contributory causes, the free trade policy that prevailed in the country in the last century and the great mechanical inventions are also to be taken into consideration.

But there are certain di-advantages as well. The dearness of land arising from the density of population and the great development of industry, high wages of the labourers and the deficiency of water power are giving anxieties to the British industrialists. The high tariff of other countries of the world is affecting adversely the trade of the British Isles to a great extent.

Great Britain is not fortunate as the possessor of the essential raw-materials of industry. She has of course still the deposits of valuable coal and low-grade iron-ore but these are no longer the only key materials of an industrial economy. Indeed, no other great industrial country has so few of the raw materials. The following table will show her dependence of basic raw materials and minerals on other countries.

PERCENTAGE OF WORLD OUTPUT OF BASIC RAW MATERIALS
PRODUCED AND USED IN GREAT BRITAIN (1938)*

Raw material		p c of world out- put produced in Great Britain	p c of world out- put used by Great Britain
Coal	..	18.9	15.5
Iron	..	4.8	11.5
Petroleum	..	—	4.5
Nickel	..	—	27.0
Manganese	.	—	9.5
Tin	..	1.3	35.0
Cotton	..	—	10.0
Wool	..	2.7	2.0
Rubber	..	—	15.0
Bauxite	..	—	5.5
Lead	..	1.6	20.5
Zinc	..	0.6	7.5
Copper	..	—	13.5

* Great Britain—the world's best customer—Ministry of Information, London, 1945.

Population. The United Kingdom is a very densely populated country. The distribution of population in 1931 was:—

Scotland	4,842,554 people
England and Wales ..	39,947,931 „

The average density of population in England is 685 per square miles. *With the exception of Belgium, Holland and Java this is the highest density of population recorded for any country.* In 1947, the total population of Great Britain was estimated at 48·4 millions

Northern England and South Wales are the centres of the densest population, because these are the industrial areas. Recently population in Southern England, particularly in the suburbs of London, has increased with great rapidity. Lancashire, Glamorgan, Warwickshire, Durham and Staffordshire have more than 1,000 people per square mile. The industrial activities of these regions attracted people from other parts of the country. The agricultural districts of Norfolk, Suffolk, Lincolnshire and Cambridge contain less than 500 people per square mile. The mountainous districts are all sparsely populated.

The trade depression of 1931 resulted in changing the distribution of population. Density of population is decreasing in the industrial areas of Lancashire, Cheshire and Durham. South-East England is fast becoming a region of dense population.

Mining. The minerals of Great Britain are highly important.

PRINCIPAL MINERAL PRODUCTS OF GREAT BRITAIN.

(in 000 Metric tons)
1938

Coal	228,000	Gypsum ..	1,092
Iron	14,200	Sand stone ..	4,346
Lead	38	Lime stone ..	15,926
Zinc	19	Chalk ..	10,167
Tin	3	Clay ..	26,500

The two most useful minerals—coal and iron—are found in close proximity. Coal is found throughout the country in large quantities; in the annual production of coal Great Britain

occupies the third place. The value of several of the British coal-fields is enhanced by their closeness to the sea. Coal is the principal cargo of the coastal trade and forms one-third of the total. The quality of British coal is fairly good.

The coal mining is very important in the national economy of the country. It employs nearly one million people, and about four millions of the population of the country are directly dependent on it. Coal mining accounts for 90 per cent. of the value of the total mineral output of the country. Coal is also important in British export trade, accounting for over 5 per cent. of the total value of the country's exports.

CONSUMPTION OF COAL.

(in million tons)
1938

Disposal			
1. Gas work	..	..	18 2
2. Electricity generating stations belonging to authorized undertakings and to railway and tramway authorities			14 9
3. Railway Companies	..		12
4. Vessels engaged in coastwise trade	..		1 1
5. Iron works	..		18 7
6. Collieries	..		11 8
7. Domestic Coal	..		40 0
8. General manufactures	..		57 7

The principal coal-fields of the United Kingdom are the following :

The Pennine Range

1. Northumberland and Durham. 2. York, Derby and Nottingham. 3. South Lancashire. 4. North Staffordshire.

The Midland Plain

5. Warwick. 6. South Staffordshire. 7. Leicestershire.

The Welsh Mountains

8. North Wales. 9. South Wales.

The Midland Valley of Scotland

10. Ayrshire. 11. Clyde.

Small coalfields are also found in Bristol, Edinburgh and Kilkenny in Ireland.

THE ANNUAL PRODUCTION OF COAL IN U. K.

(in 000 Metric tons)

In Britain :	1914	..	..	..	..	270,000
	1926	..	..	..	..	275,000
	1936	..	..	..	..	217,000
	1938	..	..	..	..	232,000
The Scottish Coal-fields	..	..	..	..	14	per cent.
„ Yorks, Notts and Derby	..	..	..	..	31	„ „
„ Lancashire	..	..	..	..	6	„ „
„ Midlands	..	..	..	..	11	„ „
„ South Wales	..	..	..	..	16	„ „

The South Wales Coal-field is very important in respect of quantity and quality. The coal extracted here is particularly used in steamships. South Wales was the greatest coal-exporting area in the world till 1914. But since 1920 the coal industry of South Wales has been passing through years of great difficulty. The demand for coal has fallen considerably.

Factors responsible for the decline of the Wales coal-fields.

(i) The high price of British coal. The U. S. A. is putting cheaper coal in the markets. (ii) The rapid development of hydro-electricity. France, Italy, Sweden and other former customers have developed hydro-electric power. (iii) The discoveries of new fields. Australia and Natal—once large importers—have discovered many new coal-fields.

THE FIGURES SHOWING THE DECLINE OF THE
BRITISH COAL INDUSTRY

Year	Output (in million tons)	Exports (in million tons)	Employment (in thousand)
1913	.. 287	.. 98	1,230
1927	.. 251	.. 72	1,037
1933	.. 208	.. 57	797

Though the coal-field of North Wales is not as large as that of the south, yet the former enjoys a direct sea communication.

The York, Derby and Nottingham coal-field is about 70

miles long and 20 miles wide. This coal-field is within easy reach of the iron deposits. Nearness to sea has helped the growth of export trade. Scandinavia, Denmark and the Baltic States import coal from this area. The woollen industries of the West Riding and the iron and steel industries of Sheffield are particularly associated with this coal-field.

The cotton industry is primarily important in the South Lancashire coal-field

The Midland coal-field developed because of the iron and steel industry. Since 1929, with the decline of the steel industry, the Midland fields are passing through difficulties. To-day these fields contribute only 11 per cent. of the U. K.'s total coal.

The Ayreshire coal-field of Scotland raises coal mostly for export. The Clyde estuary does not actually possess coal, but it can very conveniently use the Lanarkshire coal. The great ship-building industry of the Clyde basin is based on the Lanarkshire coal and iron

In July 1946, the **Coal Industry Nationalisation Act** was passed to bring the coal mining industry into public ownership and control. On the 1st January 1947, the coal mining industry and certain associated activities passed into the control of *National Coal Board* whose duty it is to secure the efficient development of the coal mining industry and to make supplies of coal available in quantities and in prices which seem best calculated to further the public interest. The National Coal Board is responsible for about 1500 collieries, and some 45 per cent of the coking and by-products plants of Britain. The Board has become owner of about 300,000 acres of land, 14,000 dwelling houses and a wide variety of works, plants, mills and every type of transport. It has become the employer of 723,000 workers in addition to large number of workers engaged in ancillary undertaking. There is urgent need to increase the output of coal immediately in view of increase in home consumption and programme of coal exports to European countries. In 1947, the coal production was 197 million tons. In the same year, 185 million tons were used for home consumption, and 6 million tons were exported. It is estimated that in 1949, the home consumption will increase to 200 million

tons, and exports to 20 million tons. Consequently production will have to be increased to 220 million tons.

The **iron ore** deposits are found in North Lancashire, Clyde basin, North Staffordshire and South Wales.

The supplies of South Wales iron-ore have been nearly exhausted and the iron and steel industry of this area now depends on Spain and France for iron-ore. The most important iron-ore field lies in South-East England, which supplies about 85 p.c. of the iron of Great Britain. The principal iron-ore centres are (a) in the Cleveland Hills; (b) at Scunthorpe and Frodingham in Lincolnshire, (c) at Corby and Kettering in Northamptonshire; and (d) near Banbury in North Oxfordshire. The iron fields of the U. K. cannot meet the requirements of the metal industry. Every year the country has to import a considerable quantity of iron and pig iron from abroad. In 1938 the United Kingdom imported 51 million tons of iron-ore from abroad.

The other minerals found in the country are lead, zinc, copper and tin. Limestone, chalk, granite, slates and salt are also quarried. Quarrying is an important occupation in Cornwall, Devon, Somerset, Wales and the Cumbrian peninsula. At one time tin was the most important mineral of England; now it has almost been exhausted.

In the United Kingdom the production of *strategic minerals* is not large, and many of such minerals are absent. But the country has excellent access to those minerals, because of her empire and world-wide trade.

STRATEGIC MINERAL SUPPLIES IN THE U. K.

(Figures based on 1938 production)

	Home production (million tons)	Empire (million tons)	Other sources (million tons)
Coal	230	75	15
Iron ore	12	10	6
Pig iron	7	3	1
Steel	10	3	...
Oil	...	7	84

STRATEGIC MINERAL SUPPLIES IN THE U. K.—*Contd.*

	Home production	Empire (thousand tons)	Other sources (thousand tons)
Manganese	950	150
Chrome ore	170	130
Tungsten	50	100
Copper	500	900
Aluminium	550	850
Nickel	90	30

Access to these minerals has made the position of the United Kingdom strongest in the world, except that of the U.S.A.

Agriculture. The British Isles is a great manufacturing country, yet the farming activities of its people occupy an important place in the national economy. About 11 per cent. of the total population is engaged in agricultural occupations. In Scotland, it is 3 per cent., in England 2 per cent. while in Ireland 53 per cent. The principal crops are wheat, barley, oats, beans, peas, potatoes, turnips and swedes.

Land being dear and limited in the U. K., the method of cultivation is always intensive. Wheat, barley, oats, sugar beet and fruits are cultivated in those parts where climatic conditions are suitable. In Eastern England the geographical conditions are exceptionally favourable to the growth of these products. Summers are hot, and, therefore, wheat is cultivated in Lincoln, Norfolk, Suffolk, Essex and Bedfordshire. Barley requires conditions similar to those for wheat, so it is also cultivated in the eastern plains. Oats are raised in the eastern plains of Scotland and in the lowland areas of Northern Ireland. Sugar beet is cultivated in (i) the wheat lands of Eastern England, (ii) North Shropshire and the neighbouring counties, (iii) Fifehire, and, (iv) the valley of the river Barrow in south-east Ireland.

In peace time, Great Britain grows only 34 per cent. of the food she needs. For nearly a century, she has been far and away the greatest importer of food in the world. The economy of great areas of the earth's surface has been based on Great Britain's ability to absorb large quantities of primary products. As a consumer of food, she has always played a major role in the economy of the primary producers.

During 1939-45 as a result of the shortage of imported foodstuffs, the country paid great attention to the extension of agricultural fields. Many gardens and wastelands were converted to arable lands so that by the end of 1944 more than 6·5 million new acres had been ploughed up

The record of agricultural development during the same period may be appreciated from the undermentioned figures.

Harvests		1934-38	1943-44	%
		average tons	tons	increase
Wheat	..	1,651,000	3,449,000	109
Barley	.	765,000	1,641,000	115
Oats	..	1,940,000	3,059,000	58
Potatoes	..	4,873,000	9,822,000	102
Sugar-beet	..	2,741,000	3,760,000	37
Vegetables	..	2,384,000	3,197,000	34
Fruit	.	455,000	705,000	55

Cattle-rearing. Cattle are reared in every part of the United Kingdom. They are mostly domesticated for their milk, meat and hides. The number of cattle in 1939 was about 8 million. Between 1939 and 1944 the number has increased by 700,000. The dairy is important in the following regions

- (i) Cornwall, Devon and Somerset. Cheese and cream are made here.
- (ii) Welsh lowlands. Milk and cheese are produced for the dense population of the South-Wales coal-field.
- (iii) Cheshire. It is the most important dairying area in England. Cheese and milk are important products.
- (iv) The vales of Oxford and Aylesbury. Milk is sent to London from here.
- (v) Ireland is particularly noted for dairying which is carried on in the plains of the south-west and in the north.

Beef cattle are mostly reared on the midland plains. In England there are more than 12,000,000 cattle

Sheep-rearing. At one time England was a great sheep-rearing country and the prosperity of the country depended on the animal industry. But to-day this industry is neglected and is carried on in those parts where either agriculture is unsuit-

able or population is sparse. Even then, the U. K. contains more sheep than there are in New Zealand. In 1939 the United Kingdom had about 26 million sheep. The principal sheep-rearing areas are the following :

(1) The Pennines. (2) The Welsh mountains. (3) Highlands of Scotland. (4) Ireland.

The Fishing Industry

The fishing industry of Great Britain supports nearly one-twentieth of the population. It is one of the greatest of the British industries. The shallow waters of the continental shelf are the feeding grounds of a great variety of fish ; so the fishing industry has prospered. Fishing is mostly confined to the eastern coast of the country which faces the North Sea. Haddock, herring, cod and mackerel are the principal catches of the North Sea, and the ports engaged in this industry are Wick, Aberdeen, Peterhead, Stonehaven, Hull, Grimsby and Yarmouth. In the English Channel, near Cornwall, pilchard is caught.

Great Britain leads all countries in the fishing industry in the North Sea. In spite of such enormous catches Great Britain imports fish from countries like the U. S. A., Canada and Norway. Grimsby and Billingsgate (in London) are the two great fish markets of Great Britain.

The rivers of Great Britain supply fish, mostly salmon and trout.

Manufacturing Industries

The United Kingdom is the most industrialised country in the world. Her industries are mainly concerned with production of iron and steel goods, textiles and chemicals.

Among the manufacturing industries of the United Kingdom, the textile trades are second only to the iron and steel industry in the volume of employment which they afford. Of 1·5 million workers engaged, nearly four-fifths are found in the cotton and woollen industries, and all the remainder are in jute, hemp, silk and linen. The majority of the workers in the textiles are women.

The British manufacturing industries are mostly on or near the coal-fields. Of late, other areas have developed industries with the use of electric power.

**THE PRINCIPAL MANUFACTURING INDUSTRIES OF THE
UNITED KINGDOM IN 1937**

<i>Industry.</i>	<i>No of persons employed.</i>
Iron and Steel	635,651
Engineering, shipbuilding and vehicles . .	1,061,671
Non-ferrous metals	119,257
Textiles	1,075,553
Leather	48,294
Clothing	515,700
Food, drink and Tobacco	505,621
Chemicals, etc.	191,080
Paper, printing, etc	400,736
Timber	167,350
Clay and Building Materials	245,792
Building and contracting	434,374
Mines and quarries	840,634

Cotton-mill industry. The leadership of the United Kingdom in the cotton textile industry towards the end of the eighteenth century was due to a variety of causes. (i) "Her mercantile marine and colonial developments placed her in a strong position both for obtaining supplies of raw cotton and for serving foreign customers." (ii) The countries producing raw cotton were not industrially advanced. (iii) Her natural advantages in humid climate, water-power and coal supplies favoured the establishment of cotton industries. (iv) Contemporary engineering and metallurgical developments helped to work out a new technique of production. (v) India and other older cotton manufacturing areas were handicapped by political conditions that existed there. (vi) Europe was involved in political troubles and war.

The cotton industry has been localised mainly in Lancashire and the adjoining areas. 85 per cent. of the workers engaged in the cotton industry are to be found in Lancashire, Cheshire

and Derbyshire. Most of the remainder are in the West Riding and Scotland.

The localisation of this industry in Lancashire is mainly due to geographical causes. The spinning of cotton demands a moist climate, otherwise the thread breaks.* The moist westerlies give Lancashire the necessary degree of humidity. Second, Lancashire faces American ports, thus facilitating the import of raw cotton. Thirdly, the presence of coal, limestone and water-power was important in the early 19th century, when the factory stage of industrial development was on its way. Fourthly, the existence of a first class port in Liverpool is

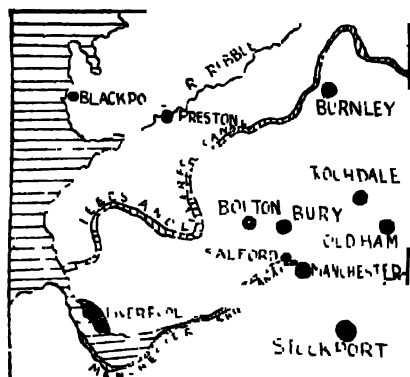


FIG No 53 The cotton-manufacturing towns of South Lancashire

another great advantage. The inherent skill of generations of operatives, the number of inventions of machinery for cotton manufactures in Lancashire, and the foresight and initiative of those citizens who carried out the scheme of the Manchester ship canal are the other vital factors which contributed to the growth of the South Lancashire cotton industry.

Great Britain does not produce raw cotton. She brings this raw material from (i) U. S. A., (ii) India, (iii) Egypt, (iv) Peru, (v) The Sudan and (vi) Brazil.

Lancashire towns may be divided into two classes according to their activities. Towns on the northern side (Preston, Blackburn and Burnley) are engaged in weaving. The southern towns specialise in spinning. Rochdale, Oldham, Bolton and Bury are the spinning towns around Manchester. The Lancashire industry depends mainly on export trade, 80 per cent. of the produce being exported. There are also some noted centres in Scotland, among which Glasgow and Paisley are important.

Paisley has specialised in the manufacture of thread. Glasgow had all the natural advantages of Lancashire, but the

* To-day moist climate is no longer an important factor, for the air of factories can be moistened by artificial means.

progress of iron and steel industries caused the industrial development to move along other lines.

The principal customers of British cotton goods are India, China, Egypt, Germany, Holland, Turkey, West Indies, South America, Central America, Central Africa, Japan, Australia, Canada, U. S. A., Spain, Italy, France, and Switzerland. Great Britain also imports considerable quantities of cotton goods from Japan, France, Germany and Switzerland.

Lancashire had virtual control over the world cotton market till 1913. Since then she has fallen down from that enviable position. Competition of Japan and the U. S. A. has taken much of her Eastern markets. Besides, many countries of Asia and Africa which previously used to import Lancashire cotton piece-goods now-a-days manufacture them. To add to these, protective tariffs and over-production have largely aggravated the depression. It is possible for Japan to manufacture cotton goods at a price far cheaper than what is required by Lancashire. Cheap labour, nearness to vast markets like China and India, and State support are the advantageous factors on the side of Japan.

DECLINE OF COTTON MANUFACTURES IN U. K.

(in million)

1913	1937
Export of cotton goods 7,000 sq yds.	Export of cotton goods 1,900 sq yds.
Import of raw cotton 2,100 lbs	Import of raw cotton 1,200 lbs
Export to India . . 3,000 sq. yds	Export to India . . 4,000 sq. yds.

A strong movement for the amalgamation of different concerns under a central organisation is afoot with a view to bringing about internal economics.

In the production of high quality cloth, Lancashire holds her own in free competition ; but as regards coarse cloth she has lost much ground in competition with the East. It is doubtful if she will be able to regain much of the trade she has lost in the commonest qualities, and she may not be able to keep all the trade that she still holds. "The future of

Lancashire will depend to a great extent on the ability to retain a large share of the trade in high quality cottons and this will demand lower production costs. She must see that methods of organisation are capable of adjustment and if required, of meeting changed and changing conditions and are kept at the highest pitch of efficiency."

Iron and Steel Industries

In the production of iron goods Great Britain occupies the fourth place in the world. The existence of local coal and iron in close proximity mostly accounts for the growth of iron and steel centres in the country. There are five important steel areas in the United Kingdom.

(i) *The Black Country*. This has become the chief iron and steel-producing area of Britain. Local supplies of iron, wood, charcoal and limestone gave birth to the industry in this area. The distance of the area from the sea makes cost of transport heavy, and, therefore, goods which are valuable in proportion to their bulk are manufactured here. The important centres are Birmingham, Coventry, Dudley and Redditch. *Birmingham* specialises generally in the production of motors, cycles, railway equipment, machine tools, electrical apparatus and brassware, *Coventry* in cars and cycles, *Redditch* in needles, and *Dudley* in chains.

(ii) *Sheffield*. The manufacture of metal goods in the region owes its origin to the existence of local iron-ore, wood and water-power. The bulk of the iron-ore is now drawn from Lincolnshire and Sweden. Both heavy (*e.g.*, manganese steel, chromium steel and tungsten steel) and light (*e.g.*, cutlery) metal goods are manufactured in Sheffield. Other centres are Rotherham and Chesterfield.

(iii) *The North-east Coast*. *The Tyne, Wear and Tees region*. *Tee-side* is the chief iron-smelting centre. Other towns in the locality are Hartlepool, Middlesbrough and Darlington. The advantages of the region for steel industry are: (a) the nearness of the iron-ore, (b) the excellent cooking coal of South Durham, (c) the supplies of limestone in the Pennines, and (d) the facilities for importing high grade ore from Sweden and Spain. Hartlepool is noted for ship-building, Darlington

is an important centre for railway engines and Middlesbrough is an engineering centre. In Tyne-side the chief centre is New

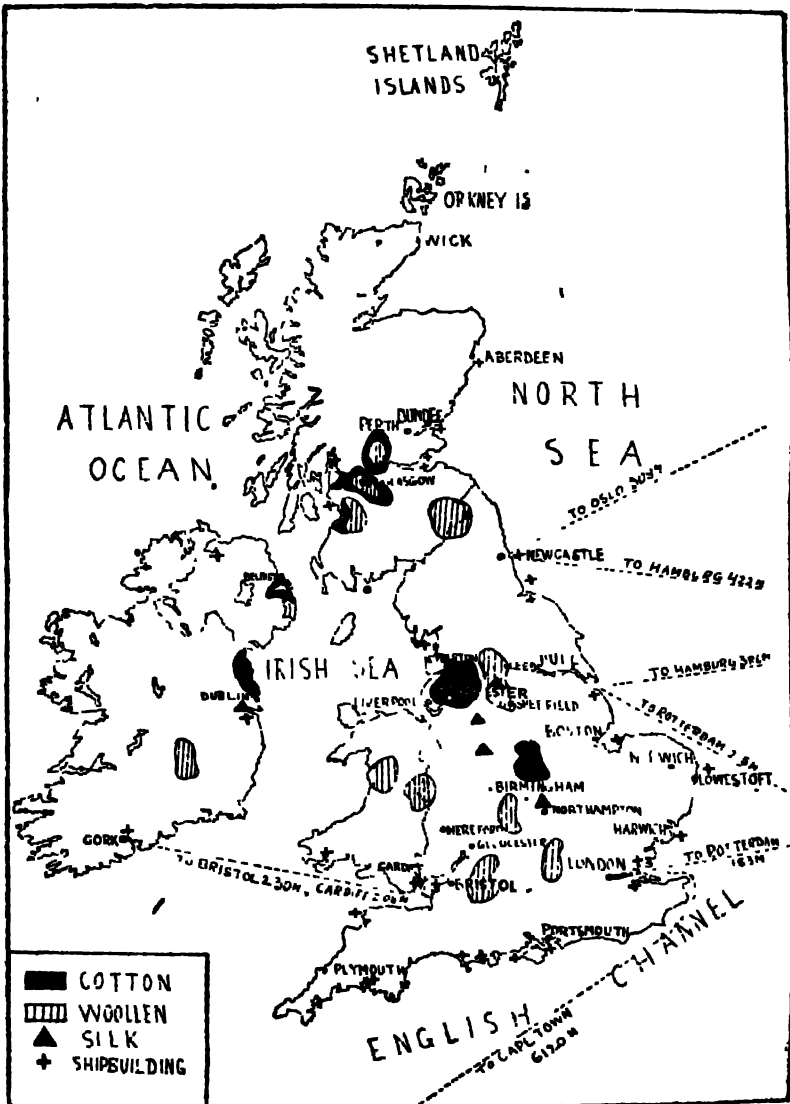


FIG. No. 54. The chief manufacturing regions of the British Isles.

Castle where ships of modern design are built. Wear-side, with Sunderland as the chief centre, builds cargo-boats.

(iv) *The Furness District.* This North-Western coastal region produces steel and pig iron. Barrow is the ship-building centre.

(v) *South Wales* manufactures tin-plate and galvanised iron. Iron-ore is imported from Spain and Algeria, and tin is drawn from Malaya, Bolivia and Nigeria. Swansea and Llanelli are the two chief towns of the region.

The Central valley of Scotland is becoming increasingly important for general engineering and ship-building (Glasgow, Greenock and Dumbarton).

Ship-Building is one of the principal industries of the United Kingdom. The geographical position of the shipbuilding industry in any country is determined by two main requirements. These are: (a) a navigable river with easy access to the sea for launching purposes; (b) easily available supplies of the main building materials. If there is any change in the principle of building material, the geographical location of the industry may also change. This has, in fact, happened in Britain in the last century and a half. In the early days of shipbuilding, vessels were made of wood. The shipbuilding was carried on in those estuaries and harbours where local supplies of wood were available or where conditions were present for importing timber. One of the chief centres was the Thames. The change from wood to iron as the material for ship building in the middle of the nineteenth century shifted the industry to centres close to iron and steel production. The reasons for the growth and success of the industry in Britain are the following:

- (a) Deep tidal estuaries.
- (b) Coal-fields, with steel industries near the estuaries.
- (c) The increasing demand for ships.

The shipbuilding industry of the United Kingdom is now concentrated in five principal regions:

- (a) the North-east coast (rivers Tyne, Wear and Tees)
- (b) The Clyde
- (c) Belfast
- (d) Birkenhead
- (e) Barrow.

In the *North-East coast*, the chief centres are South Shields, New Castle and Wallsend, Sunderland, Hartlepool and Middlesbrough. All types of vessels are built in the region. In the *Clyde basin* large passenger liners are built. Naval vessels are also constructed in this area. The Clyde yards are among the best equipped in the world. "In the ten years immediately preceding the present war, the North East coast region and the Clyde yards were responsible between them for some 75 per cent. of total British output." Although *Belfast* area has no large iron and steel producing region to back it, the necessary fuel and raw materials are easily imported from Scotland and Cumberland. Belfast specialises in the construction of motor ships.

Birkenhead undertakes naval shipbuilding, luxury liners and dredgers. *Barrow* has been an important centre for the construction of merchant vessels, submarine and naval vessels. The subsidiary centres for shipbuilding are Goole, Aberdeen, Dundee, Leith, Southampton and Cowes.

Today there is no shipbuilding on the Thames. London was the chief centre in ship-building industry before the advent of iron. The building of ships on the Thames has become uneconomic because of the high cost in bringing fuel and steel from the distant centres of production. This industry on the Thames died out slowly and the last big vessel was built in 1911. But London has an extensive ship-repairing industry.

The woollen industry of Great Britain is older than the cotton industry, but it is now less important and not so highly organised. The industry is centralised in Yorkshire. The geographical causes underlying the localisation of this industry in Yorkshire are many :

- (a) Necessary climatic conditions.
- (b) Water-supply from the Pennines noted for washing and dyeing.
- (c) Sheep-stock of the Pennines.
- (d) Waterpower.
- (e) Nearness to the sea-coast.

The West Riding of Yorkshire, where coal is found abundantly, is the principal seat of the woollen industry. The towns principally engaged in this industry are Leeds, Bradford, Halifax and Huddersfield. Bradford produces worsted goods,

and Halifax manufactures enormous quantities of carpet. The supply of wool from the neighbouring pastures cannot meet the demand of the industry and much of wool is imported from Australia, New Zealand, South Africa, British India, Argentine and Uruguay. England imports more than 60 per cent. of New Zealand wool, 25 p.c. of Argentine wool, 30 p.c. of South African wool and 35 per cent. of Australian wool. At present England is the largest importer of wool in Europe. The principal customers of British woollen products are Germany, Japan, Sweden, Norway, Russia, Denmark, Italy, Spain and U. S. A.

The Leather Industry of Great Britain is the third largest leather industry in the world. The industry is marked by a very high degree of specialisation. Its standards of quality are exact and are accepted throughout the world. About 8 to 10 million sheep lambskins, a much smaller number of calf-skins, some two and a quarter million cattle hides and a few horse and bull hides are normally available each year from domestic stock. About one-third of the total raw-material needed is thus obtained. The rest is imported. India is the largest single supplier of goatskins. The leather centres are London, Bristol, Liverpool and Glasgow. In 1946 the British Leather industry engaged 30,000 workers. The chief centre for heavy leather in England is in the South Lancashire district which extends from Liverpool to beyond Manchester. There are also heavy leather centres in Yorkshire, Essex, Kent and Surrey. Light leather centres are widely distributed.

Other industries include chemicals, glasswares, silk, jute and artificial silk. Chemicals and glasswares are manufactured in South Lancashire and Cheshire where salt deposits are available. Midland towns are important for leather industries. Jute is manufactured at Dundee.

It was the privilege of Dundee to control the world market for manufactured jute till 1908.

The Commerce of Great Britain*

At present the United Kingdom ranks second to the U. S. A. in total value of world trade. Her trade is all sea-borne. The

* Based on No. R1679 (23-9-48) British information services.

predominance of imports over exports is the most peculiar feature of British Commerce. At first sight it might seem that she has an unfavourable balance of trade. But it is not so. Great Britain is a great lending country. She gives services in banking, insurance, shipping, and investments. These are generally known as "invisible exports". When we take into account the figure of earnings from these invisible exports, we find that Great Britain has undoubtedly a favourable balance of trade. The two aspects of her export trade are (1) the exportation of the products of British industries and (2) the re-exportation of imported goods in substantially unchanged forms. The first includes the products of British soil, mines, forests, fisheries and factories; the second includes such commodities as rubber, tea, wool, and vegetable oil.

The pattern of foreign trade changed considerably since 1938.

THE PATTERN OF FOREIGN TRADE OF THE UNITED KINGDOM

(In percentage of total value)

IMPORT			1938	1946	1947
Food, Drink and Tobacco	..	..	46.8	49.0	45.1
Raw materials	..	..	27.0	30.0	31.3
Manufactures	..	..	25.4	18.9	22.3

EXPORT

Machinery	..	..	12.3	12.5	15.9
Vehicles	..	..	9.5	12.6	14.8
Iron and Steel	..	..	8.9	8.7	7.4
Cotton yarns & manufactures	..	..	10.6	6.9	6.8
Chemicals	..	..	4.7	7.2	5.9
Woollens	..	..	5.7	4.8	5.1
Other textiles	..	..	5.2	8.7	7.9
Electrical goods	..	..	2.9	4.1	4.3

Great Britain is still the world's best customer. She absorbs about 21 p.c. of the total exports of the world. Her

share in the total exports of the different countries is shown below.

Regions	P C. of total exports absorbed by Great Britain.	Regions	P C. of total exports absorbed by Great Britain.
Canada ..	40	Africa ..	24
U. S. A. ..	17	Asia ..	14·7
Latin America ..	15	Australia .	61
Europe ..	12	U. S. S. R. ..	29

In 1938, she was the *best customer* of the U. S. A., Canada, India, Holland, Australia, Sweden, Argentina, South Africa, Denmark, U. S. S. R. and New Zealand; the *second best* of Germany, Poland, Switzerland and British Malaya, and the *third best* of France, Czechoslovakia and Brazil. Thus the prosperity of many countries whose economies are dependent upon a flourishing export trade is bound up with the prosperity of Great Britain as the world's best customer.

Great Britain is also a great seller. Indeed, till 1914 she was the greatest exporter of the world. After the first world war, however, the U. S. A. took the first place as an exporting nation; but in 1938 Britain was a good second.

In the total export trade of U. K. the manufactured goods alone account for 80 per cent. or more. The only important export outside manufactured goods is coal. The chief articles of export are cotton goods, iron and steel, woollen goods, chemicals, paper, machinery, leather goods, tobacco, jute, arms and ammunitions.

The principal imports may be divided into three groups:

- (a) Food, drink and tobacco.
- (b) Raw materials.
- (c) Manufactured articles.

Food, drink and tobacco: wheat, flour, maize, oats, pulse, rice, barley, rye, dairy produce, fish, meat, tropical and sub-tropical fruits, sugar, spices, tea, coffee, cocoa, wine, tobacco, vegetables, etc. The foodstuffs constitute the most important item in the import trade because the United Kingdom is self-sufficient to the extent of 45 per cent. only of her needs.

Raw materials : cotton, wool, flax, jute, silk, hemp, rubber, furs, timber, oil-seeds, petroleum, hides and skins, sponges, ivory, tanning materials, iron ore, copper, lead, manganese, zinc, tin, gold, silver, etc.

Manufactured articles : cotton yarn and cotton manufactures, leather goods, iron goods, glass, electrical goods, silk goods, porcelain, etc.

The principal import markets of the United Kingdom in 1947 were the following, placed in order of importance :

	£ (million)		£ (million)
U. S. A. ..	295	New Zealand ..	90
Canada ..	230	Br. West Africa ..	53
Argentina ..	131	Sweden ..	41
Australia ..	97	Cuba ..	40
India and Pakistan ..	94	Belgium ..	36

Total value of imports in 1947 was £1786 million against £920 million in 1938.

SOURCES OF BRITISH IMPORTS

Food

Wheat : Canada, Argentina, Australia.
 Rice : Burma, Siam, Spain.
 Sugar : Cuba, Australia, Mauritius.
 Tea : India, Ceylon, Java
 Coffee : British East Africa, Costa Rica, Brazil.
 Cocoa : Gold Coast.
 Beet : Argentina, Uruguay, Brazil, Ireland.
 Mutton : New Zealand, Australia, Argentina.
 Butter : New Zealand, Denmark and Australia.
 Cheese : Holland, Canada, New Zealand.

Non-Food

Cotton : U. S. A., Sudan, Egypt, India.
 Jute : Bengal.
 Flax : Russia, Belgium, Baltic States.
 Wool : Australia, New Zealand, South Africa, Argentina.
 Wood : Sweden, Finland, Canada, Russia.
 Rubber : Malaya States, Ceylon, Straits Settlements.
 Iron ore : Spain, Algeria, Sweden.
 Tin : Malaya States, Bolivia, Chile, Nigeria.

The principal export markets of the United Kingdom in order of importance are the following :

1947		1947	
	£ (million)		£ (million)
Union of South Africa ..	91·8	New Zealand ..	43·0
India, Pakistan ..	91·6	Argentina ..	35·0
Australia ..	71·8	Belgium ..	34·0
Eire ..	56·0	Netherlands ..	31·0
U. S. A. ..	48·0	Br. Malaya ..	30·0
Canada ..	43·0	Sweden ..	30·0

The total value of exports in 1947 was £1137 millions against £471 millions in 1938.

Great Britain has trade relations throughout the world. A brief account is given below :—

(i) North America.—The chief British ports trading with North America are Liverpool, Glasgow, Southampton and London. The products which come from North America to British Isles are timber, meat, dairy produce, leather and hides, furs, fish, wheat, raw cotton, maize, oats, tobacco, machinery, textile, petroleum, copper, zinc, silver, glass, graphite, rubber goods, etc. The exports to North America are machinery, chemicals, luxuries, wines, textiles, iron goods, non-ferrous metals, etc.

(ii) Central and South America and West Indies:—The chief articles which come from these countries to Great Britain are rubber, cocoa, coffee, raw cotton, tobacco, sponges, copra, silver, petroleum, oil-seeds and spices ; and the important items of export to these countries are cotton, machinery, wine and spirit.

(iii) South America:—The chief imports from South America are meat, wheat, maize, hides and skin, timber, copper, wool, coffee, sugar, cocoa, nitrates, rubber, petroleum, etc., and the exports to that continent are machinery implements, glass, ships, locomotives, non-ferrous metals, motor cars, chemicals, iron-goods, leather goods and coal.

(iv) Tropical East and West Africa :—Cotton goods, tin goods, knives, gun and implements are the main articles of exports from British Isles to these countries ; and the chief articles of import from these are palm oil, ivory, rubber, gum, spices, cocoa, coffee, raw cotton, timber, oil-seeds, cane sugar, etc.

(v) South Africa :—Imports to the British Isles from South Africa consist of ostrich feathers, wool, hides, diamonds, gold, copper, tea, wine and fruits. Exports from the British Isles to these places are textiles, chemicals, iron goods, clothing, leather goods, locomotives, motor cars, machinery, implements, arms and ammunitions, etc.

(vi) China and Japan :—Great Britain exports textile goods, iron goods, machinery, tobacco, arms and ammunitions. She imports tea, raw silk and silk goods, rice, sugar, toys and matches from China and Japan.

(vii) South-East and South-West Asia .—The imports are petroleum, tanning materials, wheat, rice, maize, jute, cotton, spices, oil-seeds, coffee, tea, indigo, timber, ivory, wool, gold, tobacco, hides and skins, gutta percha, rubber and pulses. The principal export of Great Britain are textiles, machinery, leather goods, tobacco, coal, paper, locomotives, cotton goods and iron goods.

(viii) Australasia :—Exports to Australasia consist of locomotives, motor cars, machinery, luxuries, chemicals, non-ferrous metals, ships, etc., and the imports from Australasia are mutton, butter, wheat, flour, wool, silver, gold, copra, wine, skin, etc.

(ix) West and Central Europe and Russia :—Imports of the British Isles are dairy produce, eggs, beet sugar, timber, wheat, forest products, tur, flour, wine, iron goods, hides, chemicals, platinum, etc. Exports of the British Isles are coal, textiles, iron goods, machinery, paper, leather goods, fish, etc.

(x) Baltic countries :—The imports from Baltic countries are dairy products, bacon, fish, eggs, skin, match, etc. ; and the exports consist of coal, iron goods, machinery, textile goods, ships, non-ferrous metals, etc.

The United Kingdom depends on the Empire countries for a large percentage of her imports and exports.

Exports				Imports			
P.C. in the total				P.C. in the total			
India	..	..	8 5	India	..	..	7.3
S. Africa	..	..	8 5	Canada	..	..	8.3
Australia	..	..	7.3	Australia	..	..	7.3
Total Empire	..	..	49.2	Total Empire	..	..	39.2
Europe	..	..	26.7	Europe	..	..	29.0

The balance of trade with the Empire countries is always favourable to the United Kingdom.

The effects of the World War II on the trade of Britain are as follows: (a) she has become very much dependent on American supplies; (b) As the cost of primary products imported by her has risen, the cost of her manufactured goods has therefore gone up. This in turn has affected her export trade. (c) Britain's reserves of gold, dollars and dollars equivalent have been depleted.

Britain now aims at reducing the excessive dependence on America as a source of supply so that there may be less drain on dollars. Her plan is also to reduce imports by encouraging greater production and the development of substitutes at home and to increase exports by greater production and productivity.

THE IMPORTANT COMMERCIAL AND INDUSTRIAL CENTRES AND SEA PORTS OF GREAT BRITAIN

London is situated on both banks of the river Thames, at the head of its ocean navigation. London is the capital of the United Kingdom and the largest city in the world; it is also the world's greatest sea port and financial centre. The imports of London are much greater than the exports, because it is the distributing centre for the whole Kingdom. London controls most of the British foreign and colonial trade with the Baltic and the Mediterranean ports. Tea and other products from the

East and wool from Australasian colonies find their chief European market in London. *Birmingham* is the commercial and industrial centre of the Midland. It specialises more particularly in small metal goods of all kinds—steel pens, swords, guns, brass work, and the standardised parts of bicycles and motor cars. *Liverpool* is the most important port on the west coast of Great Britain. The imports are chiefly raw materials and food-stuffs from the U. S. A., Canada, South America, West Africa and West Indies (especially cotton, grain, oils, paint, animal products, tobacco, etc.). The principal exports are manufactured goods of cotton, wool, iron and chemicals. Liverpool itself is not a noted manufacturing city ; exports and imports are for the neighbouring towns. *Manchester* is the chief centre of the cotton textile industry of Lancashire and is known throughout the world as the cotton metropolis. *Sheffield* is the chief centre of the heavy steel and cutlery trade. *Leeds* is the centre of a great trade in ready-made clothing, leather and machinery. It commands the largest share of the leather trade of the United Kingdom and has important soap works and oil refineries. *Bristol*, near the estuary of the Severn, is a very old port. It carries on a considerable trade with America, particularly in the import of tobacco. *Hull*, situated on the Humber estuary, has a busy continental trade especially with Hamburg and Bremen. *Bradford* in the West Riding of Yorks, is the chief seat of the worsted manufactures. Silk, velvet and dye are other products of this place. *Southampton*, on the south coast of England, at the head of a deep land-locked inlet, is noted as a terminus for American steamship lines. *Sunderland*, at the mouth of the Wear, is the most important ship-building centre in England. It has glass works, chemical factories and rope works. *Oldham*, a smoky town of South Lancashire, is noted for its cotton yarn and textile machinery. *Cardiff*, the largest town in Wales, carries on an immense coal-trade, sending more coal to foreign countries than any other town. It has chemical industries, ship-building yards, iron foundries, etc.

Swansea, the second town of Wales, does a vast trade in the smelting of iron, copper, silver, zinc, tin and lead. The iron-ores of northern Spain are received here ; the copper-ores come from the Str. Settlements and the East Indies. *Glasgow*, on the river Clyde, is the largest city of Scotland. As a port

on the western coast of Great Britain, it is favourably situated to receive raw materials from America. Glasgow is the centre of one of the busiest industrial areas of the world. Its industries are based on ship-building and its dependent activities. It also supplies many important markets of the world with steel goods. *Edinburgh* is situated on the southern shore of the Firth of Forth. It is an educational and distributing city. *Dundee*, the third city of Scotland, is the chief centre of the jute industry. It is also an important fish market. *Aberdeen* is the fourth city of Scotland. The industries and commerce of this port are in a flourishing condition. Woollen cloths and carpets, linen sheets, chemicals, machinery, and canvas are the leading products. The largest comb factory in the world is established here. *Belfast* is the busiest city of Ireland. It produces linen goods and is a ship-building centre. *Dublin* is the capital of the Irish Free State. The making of poplin, the manufacture of biscuits, dyeing, the brewing of beer and the distilling of whisky are the principal industries. *Limerick* has important manufactures of linen, spirits and liquors.

Germany*

Germany proper has an area of 181,630 square miles with 70 million population. The population density per square mile is 441. The Greater Germany of 1939 consisting of Germany proper, Austria and Sudetanland covered an area of 225,199 square miles with 80 million people.

Germany is a great industrial and commercial country. Many factors—physical and human—have contributed towards her progress. The physical factors are: (i) situation of the country in the heart of the leading industrial continent, (ii) mineral wealth like coal, iron, potash, zinc, (iii) fertility of land, (iv) perfect water-ways, (v) invigorating climate, and (vi) forest resources. Among other factors Government and race are the most important. The growth of German foreign trade is the outcome of largely Governmental efforts. The industrial expansion in Germany really began after 1871, when

* After the defeat of Germany in the second world war, the country has been divided into four zones, each to remain under an allied power for the time being. The whole of Eastern Germany is now under the Russian, while the other three zones are administered by the British, American and French separately.

the German people attained unification in the Empire and inaugurated a comprehensive, co-ordinated, national industrial policy. As a result of her victory in the Franco-German War, Germany got 5 billion francs from France as indemnity and acquired the provinces of Alsace and Lorraine. Further impetus to industrial growth was given when Germany in 1888-89 entered upon the role of a coloniser and world power and cultivated foreign markets successfully. In 1914 Germany stood next to Britain in industry and commerce.

The climate of Germany is more or less continental everywhere. The southern side of the country is mountainous and full of forests while the north is plain. From the agricultural point of view, Germany is a land of small estates and peasant proprietors in the west and south, and of large estates in the north. Intensive cultivation is practised efficiently and the products are wheat, rye, oats, beet and potatoes.

Communication by land, water and air is well organised. The railway system of Germany is one of the best in the world. In 1936 Germany had 43,000 miles of railway lines. The topographical features and average altitude are such that it has been possible to extend the railways throughout the country. In air-transport she was equal to any other country of the world till 1939.

The plain of Germany has an efficient system of waterways. In no other country has the advance of trade and industry been affected more profoundly by the development of water transport than in Germany. The river system is magnificently extensive. The important rivers are the Rhine, Elbe, Oder and Vistula. The rivers have been deepened and connected with one another by canals so that there is now a complete system of water communication over a large part of the country. The Rhine is connected with the Weser to the east, with the Danube to the south and with the Meuse to the west. The Rhine is also connected with the French waterways through the Rhine-Rhone and the Rhine-Marne canals. The Elbe, Oder and Vistula are joined by canals. The Elbe flows through the most densely populated part of the country and is connected with the Baltic through the Kiel canal. The Oder flows through the agricultural districts and canals have been constructed to join the river with the Elbe. As an artery of trade

the Danube is of minor importance to Germany. The volume of traffic passing through this river is very small. The other minor rivers are the Ems, Inn, Spree, Main and Aller. The total length of navigable rivers and canals is approximately 7,000 miles.

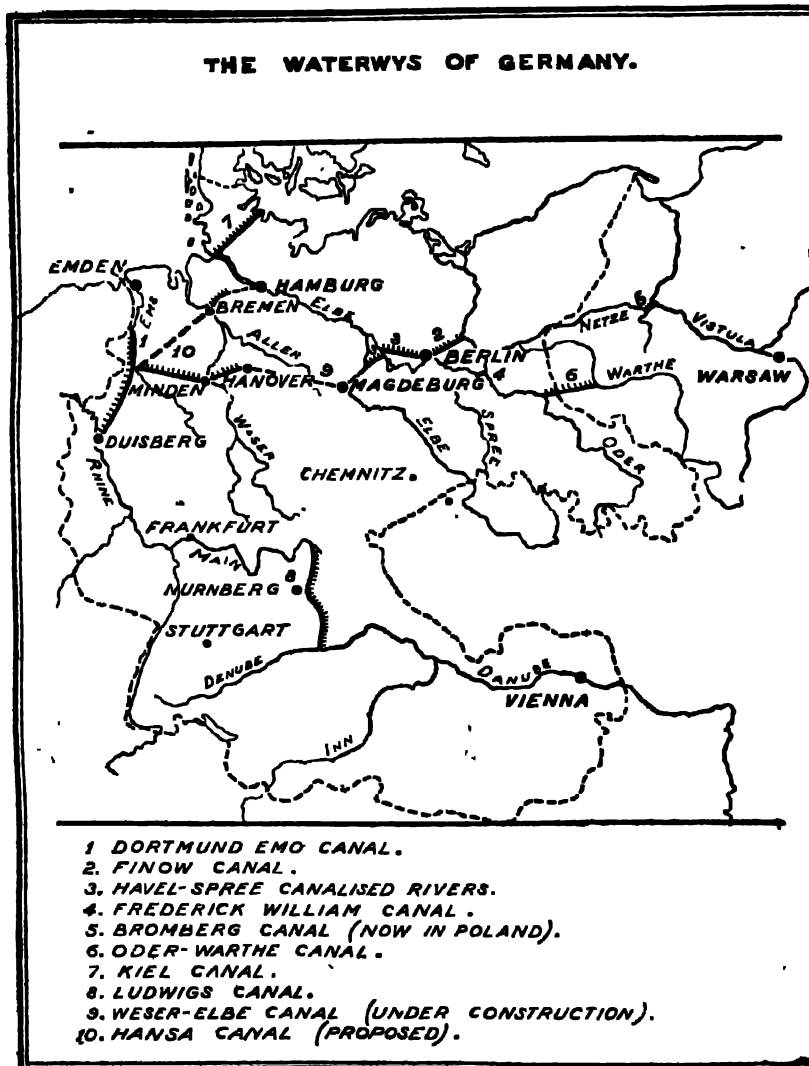


FIG. No. 55. The waterways of Germany.

In 1938 the *Midland Canal* was opened which has now made possible to connect the waterways from east to west. The Danube will soon be connected with the German canal system by the *Oder-Danube Canal*. The construction of this canal would have been completed by now but for the war. The *Oder-Vistula* canal is being extended towards the east to connect it with the Dneister river so that ultimately there can be through inland water communication between Germany and Russia. Central and Northern Germany will also be soon connected with the Danube by the *Elbe-Oder* canal and the *Rhine-Meuse-Danube* canal respectively.

Germany takes a very high place in mineral products, among which coal and iron are the most important. Coal and iron-ore, while not located in quite such proximity as in England, are abundant, and, on the whole, are easily brought together. The chief coal-fields are those of the Ruhr, Westphalia, Saar, Upper Silesia, Lower Silesia, Zwickau and Lusatia (in Saxony). Iron deposits are found in the field of Westerwald (Prussia), the Lahn-Dill region, Upper Hesse district and the Peine-Salzgitter district. Before 1918 Germany was the largest producer of iron ores in Europe. Lorraine and Luxemburg supplied 75 per cent. of the country's production. These two areas were ceded to France and Belgium after the first Great War; Zinc and lead are obtained from Silesia and the Rhine coalfields at Aachen. Salt is found abundantly in Saxony and has enabled Germany to improve her agricultural and chemical industry. Germany raises nearly half a million tons of petroleum every year.

PRODUCTION OF PRINCIPAL MINERALS IN 1937

(In 1,000 metric tons)

Coal	..	184,512	Iron ore	..	9,791
Lignite	..	184,708	Potash	..	1,673
Rock Salt	..	2,757	Petroleum	..	451
Copper ore	..	1,263	Zinc	..	165

In 1938 coal output was 186 million metric tons bituminous and 195 million metric tons lignite.

Germany is one of the leading manufacturing countries of the world. *In the application of science to industry, she is still the leader.* Nowhere else in the world scientific and technical education has received greater attention. Another special feature in modern German manufactures is the adoption of rationalisation. *Rationalisation* denotes those methods by which the cost of production may be reduced. "It includes standardisation, simplification of varieties, waste reduction, scientific management, the replacement of hand labour by machinery and economy in selling."

The great drawback of the German industrial system is the location of the principal industrial regions, especially the Ruhr, very close to the frontiers. Her industrial centres are, therefore, liable to aerial attacks during war.

The Chief Manufactures of Germany

1. Iron and steel production.
2. Chemical industries
3. Electrical goods.
4. Textiles—Cotton, Woollen and Silk

The basis of the industrial strength of modern Germany is the manufacture of iron and steel. The iron and steel production of Germany is controlled by Cartels. Till 1918 Germany was easily the leading producer of iron and steel. Much of the iron-ore is imported from France, Sweden and Spain. One great advantage of Germany in the matter of iron and steel production is the abundance of coal near iron-deposits. Moreover, the perfect waterways of the country permit easy transport of goods. The Ruhr-Saarland is the principal iron and steel-producing region of Germany. This area supplies near about 80 p.c. of the total German coal output. Local iron-ore is not enough to support the industry, and, therefore, large supplies are brought from Spain and Sweden. Till 1919 the Ruhr industrial area used the ores of Lorraine and Luxemburg. The great advantage of the Ruhr area is the presence of the Rhine which facilitates the import of raw materials and export of finished products. Essen, Bochum, Dortmund and Dusseldorf specialise in heavy engineering and machinery works.

Other iron and steel-producing areas include the Hartz mountains, Saxony and Upper Silesia. *Stassfurt*, in the Hartz mountains, has metal manufactures, largely based on imported ore. Saxony, with *Chemnitz* and *Zwickaw* as chief centres, makes machinery.

Of late, Germany has made tremendous progress in ship-building industry. In respect of tonnage, she occupies the fifth place in the list of countries having mercantile marine. The possession of tidal estuaries and coal-fields near them have helped the ship-building industry greatly. The ship-building areas are: (a) the Elbe estuary with Hamburg as the centre, (b) Lubeck Bay with Lubeck, (c) the Weser estuary with Bremer-Haven and Bremen, and (d) the mouth of the Oder with Stettin.

Electrical machinery is manufactured in Berlin and Magdeburg.

In chemical industry the supremacy of Germany is indisputable. *The spread of scientific and technical education in Germany is a contributing factor in developing chemical industries.* The results of the researches in the laboratories of the universities are turned to practical use as nowhere else in the world. The possession of potash salt gave additional impetus to these industries. The chemical industry is carried on in Berlin, Frankfurt, Dresden and Leipzig.

The German textile industries are concerned with the production of cotton, woollen and silk goods. Although cotton mills are scattered throughout the country, two areas are particularly important—the Ruhr coal-field and Saxony. Raw cotton is imported from the U. S. A., Brazil and Egypt. The chief cotton-manufacturing centres are Munchen-Gladbach, Chemnitz and Zwickaw.

The woollen industry is very widely distributed in Germany and the chief centres are on the coal-fields. Aachen, Chemnitz and Bremen are the woollen centres. The German silk industry is confined to the Ruhr coal-field.

Beet sugar is manufactured in the provinces of Saxony, Silesia, Hanover and Pomerania. Glass, porcelain and earthenware are important in Bavaria, Silesia, Thuringia, Brandenburg

and Saxony. Other manufactures are clocks and wooden wares in Baden, Bavaria and Wurtemberg and alcohol in Bavaria.

Germany has extensive trade relations with foreign countries and most of the oversea trade of the country passes through Hamburg, Bremen, Rotterdam and Antwerp. The imports consist of food-stuff and raw materials such as coal, coffee, raw cotton, cereal, dairy produce, oil seeds, wood and wool. Germany in 1938 was the second best customer in the world and absorbed 10.9 per cent. of the world's total exports. The electro-technical products, iron and steel goods, machinery, chemicals, sugar and woollen goods are her chief exports.

At present the level of industrial output in Germany has declined considerably due to the destruction of factories and industrial areas during the World War II. It has been estimated that the present level of industrial output is only 39 per cent. of the pre-war level. The prospects of the German trade will depend on the speed with which Germany can improve her position.

PORT AND TRADE CENTRES

Berlin, the capital of the Republic, is situated in the centre of the northern plain and is provided with facilities for communication in every direction. It is an important industrial and commercial town and it is also the centre of the railway system of the country. It has the largest population in Europe with the exception of London. *Hamburg* is an important river port situated on the Elbe, sixty miles from the sea, and has large foreign commerce. *Leipzig* has a large book and printing trade. It is also one of the greatest fur markets in the world. *Dresden* is a great commercial and industrial town, situated on the Elbe. It is specially known for machinery and brewery. *Cologne* is a river port situated on the Rhine. Apart from its importance as a railway centre, the town is noted for wine-making and steel production. It is also a railway centre. *Nuremberg* is famous for toy and pencil factories. *Bremen* is situated on the Weser and is important for ship-building. *Magdeburg* is a great sugar centre.

Germany's industrial weakness: (i) Although Germany is a great iron and steel-producing country, her supplies of

iron-ore are very limited. More than two-thirds of Germany's requirements have to be imported from Sweden, Spain, Luxemburg, Algeria, France and the U. S. A. Germany's iron-ore is of low grade. (ii) She is very deficient in copper, tin and bauxite. (iii) Toughening minerals such as manganese, chromium, tungsten, nickel, molybdenum, cobalt and vanadium are practically absent. All these minerals come from Africa, America and China. (iv) Her output of natural oil is negligible. Synthetic oils have been discovered, but their usefulness has not yet been satisfactorily demonstrated. (v) Cotton is entirely lacking, and, even with home-produced wool, flax and synthetic products, the textile industry is only 25 per cent. self-sufficient. (vi) Germany is very short of vegetable oils and all tropical products

Her deficiencies in rubber and textile fabrics are partly overcome by the use of buna (Synthetic rubber) and "er satz" (substitute) clothing.

Political and Economic Changes in Germany

Her colonies before 1918 consisted of German South West Africa, German East Africa, the Cameroons and Togo in Africa ; Kaiser Wilhelm's Land, Papua, North New Guinea, New Britain Archipelago (Bismark), Solomon Islands, Tonga, Upolu, Carolines, the Mariannes and the Pelew Islands in the Pacific. The Pacific colonies were considered important commercially and as naval bases from which the power of the German Government could be extended to rich and populous countries.

As a result of her defeat in the First World War in 1918, her colonies were taken away from her, and distributed as follows :—

German East Africa to Union of South Africa.

German South West Africa to Belgium.

Togo and to France.

The Cameroons to British.

Pacific Colonies : North of Equator to Japan.

Pacific Colonies : South of Equator to Australia.

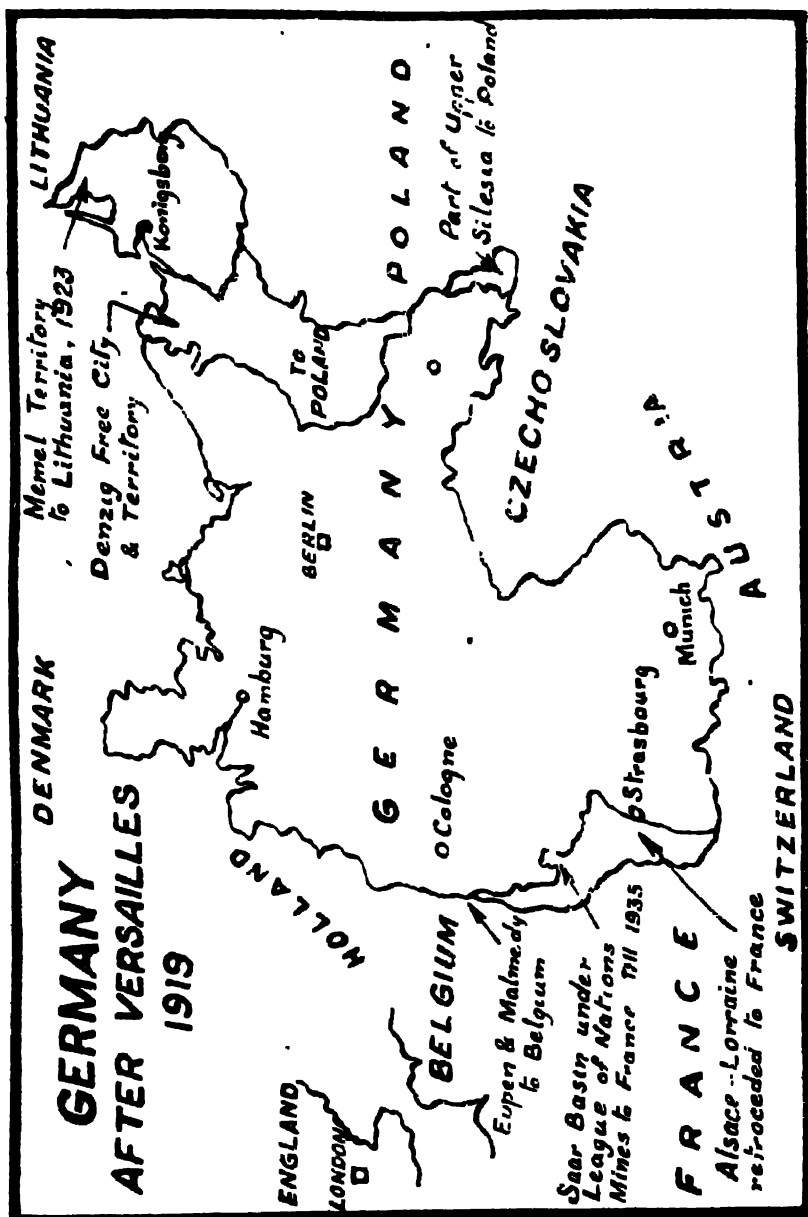


FIG. NO. 56

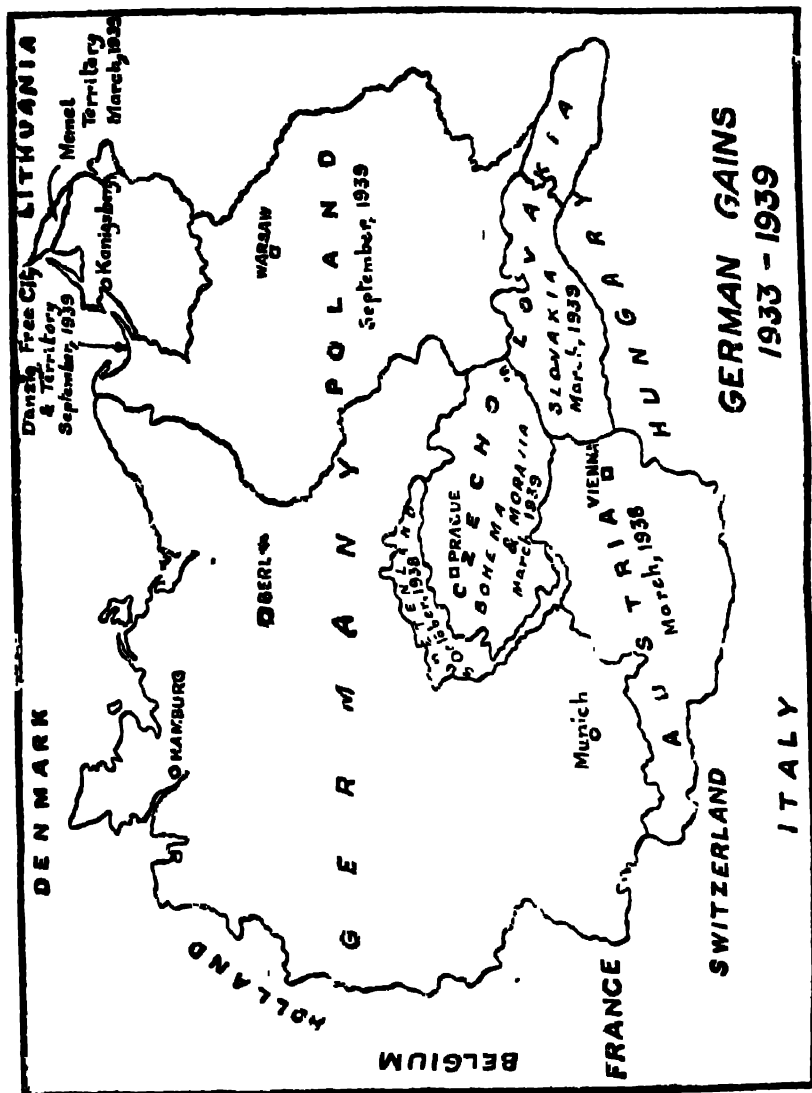


FIG. No 57

EUROPEAN TERRITORY LOST TO GERMANY IN WORLD WAR I

	Population	Area (sq miles)
Alsace-Lorraine	1,874,014	5,607
Saar Basin (under League of Nations for 15 years)	713,105	744
To Belgium (Eupen and Malmandy) . ..	60,003	400
To Poland . . .	3,854,971	17,816
Mémemel	141,238	1,026
Danzig	330,630	739
To Denmark (Sleswig) ..	166,348	1,542
To Czechoslovakia	48,446	122
TOTAL ..	7,188,755	27,996

The loss of Alsace-Lorraine meant loss of territory, population, iron ore and Potash. In Sleswig, Eupen and Malmandy, Germany lost strategic barriers. Danzig was a leading Baltic port. The areas ceded to Poland contained minerals, forest and agricultural lands. The Rhine traffic came under the control of the League of Nations.

All these losses in territories and colonies as well as the reparation payment could not keep Germany weak for long. By 1938 she emerged economically strong and resourceful. She got back Saar basin by plebiscite in 1935; and merged Austria, Sudetanland, Bohemia, Moravia and Slovakia in her territory in 1939.

Greater Germany. It included Germany proper, Austria and the Sudetan lands. By acquiring Austria and the Sudetan lands, Germany increased her territory by 25 p.c. and population by 15 p.c.

Sudetan lands, formerly a part of Czechoslovakia, were acquired by Germany in October, 1938. It has an area 11,000 square miles with a population of 3½ millions. There are rich deposits of coal, iron-ore, zinc and graphite in the Sudetan lands. The forests yield valuable timber.

In March, 1938, Germany annexed Austria. The Germans and Austrians speak the same language and have the same traditions and culture.

Importance of Austria to Germany

- (i) Germany enlarged her area by 32,000 square miles. Her population increased by 10 per cent
- (ii) Germany came nearer to the Adriatic Sea, the distance being only 60 miles
- (iii) Germany got valuable resources of timber and water-power.

Importance of Czechoslovakia to Germany. Just one year after the acquisition of Austria, Germany annexed Bohemia, Moravia and Slovakia, while Ruthenia was incorporated in Hungary. Germany was greatly benefited as regards agriculture and industries by the political changes.

Bohemia raises wheat, sugar beet, potato, barley and rye. In sugar beet production, it occupies the second place in Europe. Engineering and metallurgical works are highly developed. The world famous Skoda works are situated at Pilsen. The glass-making industry is also important. Its minerals and forests were also great economic gains to Germany.

Moravia is a great agricultural region and produces wheat, barley, and sugar beet. Boot and shoe industries and the manufacture of cotton and woollen goods are the principal economic activities of the people. Its coal-fields, though small, are famous for quality.

In Slovakia, agriculture and lumbering are the two occupations.

The second world war was started in September, 1939. The war cut off Germany from the sources of many valuable raw materials and minerals.

VALUE OF IMPORT TRADE LOST IN SECOND WORLD WAR

	Million R M	Portion of total imports
Raw cotton	225	93%
Oilseeds	222	96%
Coffee & Cocoa	198	100%
Raw Wool	175	61%
Mineral oil	171	74%
Skins & Hides	150	63%
Copper ore	141	72%
Maize	119	69%
Rubber	118	100%
Iron ore	78	35%

Germany, however, accumulated a vast stock of these materials from 1936 to 1939. Germany and Italy had, moreover, between 1939 and 1943, free access to entire food and raw materials of Europe except Russia. Between 1939 and 1942,

she conquered Poland, Yugoslavia, Greece, Crete, Belgium, Holland, France, Denmark, Norway, Baltic States, and a considerable portion of European Russia (White Russia, Ukraine, Trans-Caucasia and Crimea). The situation changed during the fourth year of the war Germany retreated from North Africa and Southern Italy. On the Eastern front, the Russians were advancing rapidly. Italy surrendered in September, 1943. During the year 1944, the German industrial centres were destroyed by aerial bombardments. In May, 1945, Germany surrendered unconditionally.

After her unconditional surrender, the country was divided in June 1945 into four zones under U.S.A., U.K., France and Soviet Union—each functioning in its own zone of occupation and also jointly in matters affecting Germany as a whole through a Control Council. The zones are allotted as East—Soviet Union, North West—U.K., South west—U.S.A. and West—France.

The Greater Germany has been dissolved, and Austria is once again a separate unit. Then there is the demand of France on the East Ruhr, Alsace-Lorraine and Palatinate, of Poland on East Prussia, Pomerania and Silesia, of Denmark on Kiel Canal Colony and of Czechoslovakia on Sudetanland. Germany itself may be partitioned into three or more states. But it is doubtful if such a partition can really divide a people tied by one language, same culture and tradition for several centuries. In 1919 the Austro-Hungarian Empire was divided into several small states many of which could not prosper as separate units. Some were even just above the starvation level. If Germany is divided into three or four states, it is certain that industries will suffer in Prussia, Eastern Prussia and Southern Germany, and there will be continuous depression. Since Germany is the Centre of European trade, and touched by 13 countries of Europe, depressed and impoverished Germany would mean impoverished Europe.

Nor is it desirable to reduce Germany to an agricultural status. Agriculture will not be able to support 70 million people of Germany. The reduction of the highly industrialized country to an agricultural status would disorganize and contract international trade at a time when an expanding world economy is of paramount importance for all nations.

Germany must remain an industrial country but she should not be allowed to manufacture articles for war purposes.

Austria

Austria is a small mountainous state, with a population of 6 millions. The relief of the country does not permit easy cultivation, and much of the food-stuffs is imported. Forests are important for supplying raw materials to the paper, pencil and cellulose industries of the country. Lignite iron, coal, salt and manganese are found. Metal industry is important. Other industries are connected with the manufacture of musical instruments, motor cars and leather goods.

The foreign trade is entirely dependent on foreign ports as the country has no coast-lines.

Vienna, the capital, is an important educational, commercial and industrial centre. *Graz* is noted for iron manufactures. *Linz* is a railway centre.

Czechoslovakia

Czechoslovak State came into existence in 1918 after the first world war and consists of Bohemia, Silesia, Moravia and Slovakia. It has 49,355 square miles of area and 12,164,631 population (1947 census).

The location of Czechoslovakia is central and favourable for the purpose of commerce. It lies between industrial West Europe and agricultural East Europe and midway between the Baltic and the Adriatic seas. "Its central position in Europe gives it industrial and commercial nodality." The great physical drawback of the country is that it has no sea-board and depends on foreign ports.

The climate is somewhat maritime and somewhat continental. The rainfall is between 20 and 30 inches and falls mostly during summer. The distribution of rain is, on the whole, favourable to agriculture.

Agriculture is highly developed and intensive farming is carried on. Fertile soil, a plentiful supply of streams and rivers and irrigation works permit cultivation of wheat, rye, barley, sugar beet and potato. The forest resources of the country are

considerable, industries like matches, paper, toys, packing-case, musical instruments and barrels are dependent on their products.

Coal is found in abundance in Moravia, Bohemia and Slovakia. There is also a small output of zinc, copper, gold and silver. In the mountains of Slovakia, tin, nickel, manganese and copper are found. The oil-fields are also of growing importance.

Czechoslovakia is a great manufacturing country. The economic life and the national prosperity of the country rest on the manufacturing industries.

The manufactures may be broadly divided into three groups: (i) Those which obtain their raw materials in the country itself, such as sugar, alcohol, porcelain, glass-making, etc. (ii) Industries which depend partially on raw materials at home, such as metal industries, chemicals and leathers. (iii) Industries which depend entirely on foreign countries for raw materials, such as textiles, etc.

As the country has no sea port of its own the natural lines of communication are by the Danube, Elbe and Oder. Raw cotton and raw wool are the two chief imports. Considerable quantities of food-stuffs are also imported. The chief exports are fertilizers, machinery and metals, footwear, paper, etc.

Prague (Praha), the capital, is the chief industrial centre. It is also a great railway town. *Brunn (Bruno)* is an important manufacturing town. It has large paper, match and leather works. *Pilsen* has breweries, engineering and metallurgical works. *Gablonz* is the centre of glass industry. *Zlin* is noted centre of leather works.

Rumania

Before the first Great War Rumania covered an area of 50,700 square miles and had a population of nearly 8,000,000. In 1919 the annexation of Bessarabia, Transylvania and Bukovina increased the area to more than 120,000 square miles and the population to about 20,000,000. Nearly 75 per cent. of the population speaks Rumanian.

Rumania is a grain country. Only 10 per cent. of the population makes its living from industry. Small supplies of

coal and iron, lack of capital and the limited home market have kept the industry in its infancy.

Land is cultivated for wheat and maize in the low plains to the east and west of Transylvania. Although the methods of cultivation are primitive, Rumania is one of the important wheat-producing areas in Europe. Sugar beets, tobacco and grapes are the secondary crops.

Rumania possesses a varied list of minerals of which petroleum, gold, copper, lead, manganese, silver, zinc and antimony are important.

In the hilly region (Ploetsi) of the eastern plains, the oil-fields produce annually more than 6,000,000 tons of petroleum and have made Rumania sixth among the oil-producing countries of the world. A pipe-line from these oil-fields goes to the port Constanza on the Black Sea. Iron-ore is found in Transylvania, but the output is small.

Forests of beech, resinous trees and oak are confined to the western plateau. The principal manufacturing products are wine, paper, flour and chemicals.

Bucharest is the capital and the chief railway centre. It has a population of 630,000. *Golatz* is the chief river port, situated on the Danube and is engaged in the export of wheat and oil. *Constanza*, on the Black Sea, is the chief port of the country.

France

France is very suitably situated for world trade. It is the only country that faces both the northern and the southern oceanways of Europe. Northern France faces the English Channel, one of the greatest highways of commerce. The ports in the western coast are conveniently located for carrying on trade with America and Africa. The southern ports are nearer to Asia and Australia than the British ports. The area of France is about 215,000 square miles or more than twice that of Great Britain. Her population in March 1946 was 40.5 millions.

France presents two distinct types of natural regions—Highlands and Lowlands. The highlands are: (i) The Armorican Peninsula (Brittany and Normandy), (ii) The Central

Plateau, (iii) Alsace-Lorraine, and (iv) The Alps, the Juras, the Pyrenees. The Lowlands are: (i) The Rhone-Saone Valley, (ii) The Paris Basin, and (iii) The Basin of Aquitaine (the region between the Pyrenees, the Central Plateau and Gâtine). In the north and in the west maritime climate prevails; in the south the climate is Mediterranean. The mean annual rainfall in France is 30 inches.

Economically the most striking thing about France is that she is virtually self-contained. France remains largely an agricultural country and imports little for the subsistence of her people. Nearly half the population of the country is engaged in agriculture. Because of her varied topography and climate, she has the greatest variety of agricultural products. Cereals form the most important crops, and of these wheat stands first. Fruits are important in the southern part of the country where lemons, oranges, grapes, olives and figs are abundant. Silk worms thrive best in the mulberry trees, France being one of the leading producers of silk.

France is self-sufficient in her requirements of pork, butter, animal fats and sugar and has exportable surplus in fresh fruits, vegetables, dried fruits, cheese and wine. She is deficient in oats, maize, vegetable oil, potatoes and dried vegetables.

The mineral wealth of France is of considerable importance. *In iron resources, France is the leading country in Europe.* The rich iron deposits of Lorraine give France an unlimited supply of the mineral. Iron-ore is also found in Normandy and Brittany in the north and in the Pyrenees in the south. *But the country, generally speaking, is poor in coal.* The most important coal-field lies to north-east near Lille. Another field exists around St. Etienne in the middle.* A little coal is also found at Alais in the south. The total supply of coal cannot meet the requirements of the country. Recently a petroleum field has been discovered in the south-east of France and drilling has already begun at St. Marcel. *France offers unique opportunities for the great development of hydro-electricity.* The

* By the discovery of large deposits in Normandy, the reserves of iron-ore have been greatly increased, but the coal-fields are still inadequate for the need of the country. In these circumstances it is not surprising that France should take careful stock of the water-power which it possesses in the Alps, the Pyrenees and the Cevennes.

manufacturing industries and transport of the southern side can be served by water-power. But so far very little has been done in this direction. The inadequate supply of coal and the meagre development of water-power cause much of the iron-ore to be exported. She is the world's largest producer of bauxite from which aluminium is made. Alsace has large deposits of potash.

Although one of the greatest industrial countries of the world, France has not been industrialised to the same extent as Great Britain. *The French manufactures are characterised by richness of quality, elegance of design and artistic finish.* In the manufacture of such goods as beautiful fabrics and laces, porcelains, jewellery, millinery, ladies' gowns, toilet goods France has no superior.

The manufactures of France are (a) textiles, (b) iron and steel goods, (c) wine, (d) luxury goods. France is the fourth textile-producing country in the world. The turnover of this industry in 1947 was valued at 311 milliard francs. The strength of the textile industry lies in the production of popular articles and luxury style goods. Among the textiles, wool, silk and cotton deserve special notice. The cotton textile industry of France is two hundred years old and was first established in Alsace. Even today, Alsace is a great centre of production of high quality goods. The northern coal-fields and the Rouen districts, both in the Paris basin, produce cotton goods of superior quality with American raw cotton. The manufacturing centres are Lille, Amiens, St. Quentin and Rouen. In spite of the scarcity of raw materials and war damages, the textile industry has almost reached pre-war level.

The northern coal-field is also important for woollen industry. In addition to the local supply from Champagne and Picardie, a considerable quantity of raw wool is brought from Argentine, Australia and New Zealand. The woollen centres are Roubaix, Rheims, Amiens and Lille.

France is one of the leading silk manufacturing countries of the world. In the Lyons district of the Rhone Valley, where mulberry trees are abundant, the silk industry is highly centralised. Power is obtained from the St. Etienne coal-field and the hydro-electric installations. The great development of the silk industry has necessitated the import of raw silk from China, Japan and Italy.

After the acquisition of Lorraine from Germany in 1918, France developed her iron and steel industry to a great extent. In 1938 she was the third largest producer of pig iron in the world. Coal is imported from the Ruhr area for the Lorraine district. The iron industries are concerned with the production of motor cars in Clermont, locomotives in St. Etienne and textile machinery in Lille.

Production of electrical goods occupies a very important place in French economy. About 180,000 persons were employed in 1948 in this industry. Production is now 150 per cent. over the 1938 level. About one-sixth of the products are exported.

France has also developed a large ship-building industry, and her shipping tonnage gives her the fifth place in the world. Marseilles and the tidal estuary of the Seine are the two important ship-building centres.

France is the greatest wine-producing country in the world. The chief centre is Bordeaux.

In the field of chemical production, France in 1948 surpassed the output level of 1938. The products are sulphuric acid, carbonate of soda, carbide of calcium, nitrate fertilizers, super-phosphate, colouring products, tanning products and colours and varnish. The output in each of these except colours and varnish is on the increase.

The recovery of the French industry after the World War II is on the way, although lack of power is still affecting the production. At present only 86 per cent. of the total requirements of coal are available by production and import. France like many other European countries suffers from the acute shortage of certain refractory products which are indispensable for coke furnaces.

The inland waterways of the country play an important part in the movement of goods from one part to another. The rivers are connected with one another by canals and thus provide a complete system of waterways. The canals and rivers are particularly important in the north-east and in the central region where the traffic includes coal, building materials and agricultural products. The important rivers are the Seine, Oise, Meuse, Saone, Rhone, Rhine and Loire. The combined mileage of canals and navigable rivers is more than 7,000 miles. Many

of the rivers of France are quite free from tolls. The Rhone has a rapid current and in many places it reaches 12 miles per hour. A scheme was formulated by the French Government to harness the waters of the Rhone and its tributaries with the following objects: (a) The generation of hydro-electricity. This will save an annual consumption of six million tons of coal. (b) Irrigation. During the hot and dry summers the

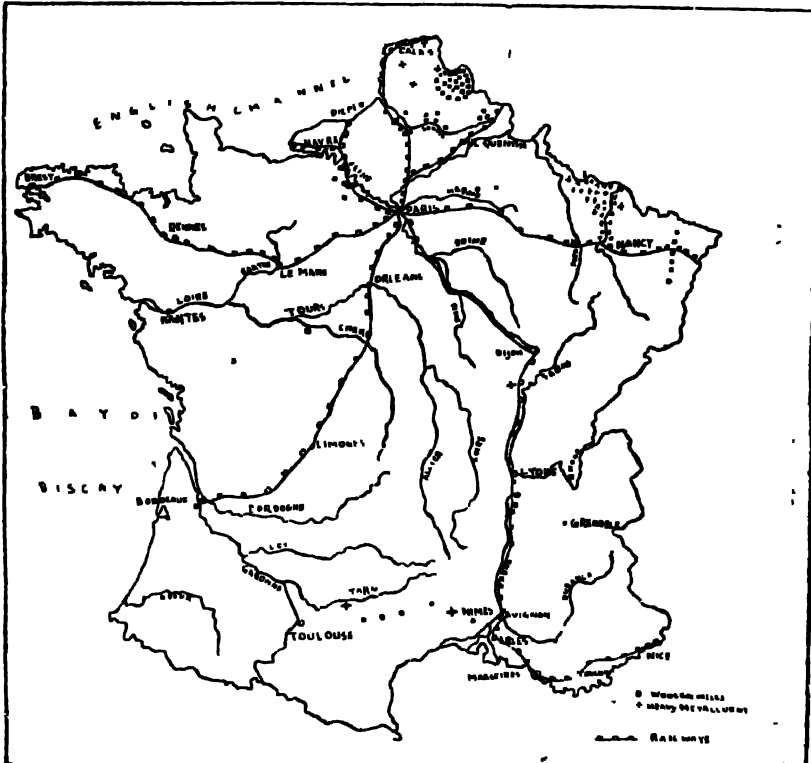


FIG. No. 58. The industrial centres of France. The rivers are also shown.

Lower Rhone valley would profit by irrigation. The length of the Rhone is 309 miles. "It is important not so much for navigation as for the fact that its valley forms the best natural highway through the mountains of Southern Europe. Consequently, it has always served as an important avenue of trade between the northern and southern portions of the continent." The Seine with its tributaries provides the best water transport

system in France. It is 480 miles long. It rises in the highlands west of the Saone valley and takes a westward course to Paris.

The length of the river canals is a little more than 3,000 miles. The important canals are (a) the Est, connecting the Meuse with the Moselle and Saone, (b) the Nantes—Brest canal, and (c) the Loire canal. There are certain drawbacks in the French waterways. These are (i) want of good inland ports, (ii) slowness of transit, (iii) great length of the journey, and (iv) the inadequate facilities in some of the canals for the transference of goods to or from the railways.

France is the only great manufacturing country in Europe that is almost self-sufficient in food products. Cotton, wool, oilseeds, hides and skins are its chief imports. From the French colonial possessions* sugar, rice, coffee and wild rubber are imported. Its principal exports are wine, dairy produce, bauxite, textiles, iron ore, chemicals, leather, automobiles and sugar. French exportations of glass works are also important. The main customers of French glass works are U. K., Belgium, Sweden, Switzerland and U. S. A.

At present the share of manufactured goods in the total export trade of France is 72 per cent as against 50 per cent in 1938.

SHARE OF THE COUNTRIES IN THE IMPORT TRADE OF FRANCE

1939

U. S. A.	.	..	9.5	Italy	..	..	1.4
England	..	.	8.0	Rest of Europe	.	..	4.2
Scandinavia	.	..	4.0	Iberian Peninsula	..	..	1.3
Holland	..	..	2.5	French N. Africa	..	..	12.8
Belgium	..	.	7.2	Other Colonies	..	..	10.6
Germany	..	..	7.7	Other Overseas countries	..	..	25.6
Switzerland	.	.	2.0				

* France has a great *Empire* both in size and population. The area of the *Empire* is 4 million square miles, and its population over 107 millions. But in comparison to the British *Empire*, it is far less productive, some parts being barren and only sparsely populated.

French possessions: Syria, Indo-China (Anam, Cambodia, Cochin-China, Tongkong, Laos), Africa (Algeria, Tunisia, Senegal, French Sudan, Guinea, Ivory coast, Dahomey, Mauritania, Niger, Equatorial Africa, Cameroon, Togo, Reunion, Madagascar, Mayotee and French Somaliland), America (St. Pierre, Guadeloupe, Martinique, Guiana), Oceania (New Caledonia and Tahiti).

IMPORTANT PORTS AND TRADE CENTRES

Paris is the political and commercial centre of the Republic. The railways radiate from Paris. *Harve* is situated at the mouth of the Seine and is a great sea port. It has extensive trade with North and South America. *Lyons* is situated on the Rhone and is the largest silk manufacturing city of the world. Raw silk is obtained from the Rhone-Saone valley, but the greater part is imported from Italy, China and Japan. The silk industry is carried on in cottages and small factories within the city. In the industrial suburbs of Lyons a great development of artificial silk manufacture has taken place. Already Lyons produces about 80 per cent. of the artificial silk manufactured in France. *Marseilles*, on the Mediterranean coast, is the most important port of France. With its local supply of olive oil and easy importation of vegetable oils from the Tropics, Marseilles has become one of the world's chief centres of the manufacture of soap, margarine and candles. *Bordeaux*, on the west coast, is the chief centre for the exportation of wine. Within recent years great development has taken place in ship-building. *Rouen*, situated on the Seine, is a great cotton-manufacturing town. *Lille*, on the North-East coal-field, is a town noted for linen manufactures. Cotton is also manufactured here. *St. Etienne*, near the great coal-field of the middle, is a great industrial town. The chief industries are those of iron and silk ribbon goods. *Dunkirk* is an important port on the northern coast of France. It has extensive trade with South America.

Italy

Italy's position is very favourable to commerce. It has sea on three sides and stands in the centre of the most important inland sea in the world.

Geographically, Italy presents three major divisions, viz. :

- (i) The Northern plains and the mountains
- (ii) Peninsular Italy.
- (iii) The islands.

The Northern plains have more or less the continental type of climate, as these are shut off from sea influences by the

cultivation of a variety of crops. Vine, wheat, maize, rice, flax, hemp and sugar beet are cultivated with the help of irrigation. Rice is cultivated in the valley of the northern provinces on large-scale farming. There is no co-operative farming. About two-thirds of the total production of rice in Italy are consumed internally, while one-third is exported mainly to Argentina, Switzerland, Germany and France. A large cultivation of vine throughout the country has placed Italy in the second position among the wine-manufacturing countries. The Mediterranean climate of peninsular Italy favours the growth of fruits. Olive, lemon, orange, apricot and fig are extensively raised. Mulberry trees are also found in the south in large number as a result of which Italy has become the largest silk producer in Europe.

The mining industry is most developed in Sicily, in Tuscany, in Sardinia, in Lombardy and in Piedmont. Of minerals sulphur is the most important. It is found chiefly in Sicily. Iron-ore is obtained from the island of Elba and Tuscany. Italy is the largest producer of mercury. The chief mercury mines are the Monte Amiati in Tuscany, and the Idria. Marble stones of the best quality are found in the country. Coal is generally scarce; hydro-electricity is developing. The relief of the country and the innumerable streams offer unique opportunity for the development of water-power. Other minerals found in Italy are lead, zinc, bauxite and manganese.

Italian manufactures are developing with remarkable rapidity. Italy has certain advantages. These are (i) cheap labour, (ii) local market, (iii) water-power, (iv) State support, (v) skill and enterprise of the people. *The characteristic manufacturing industries are mainly those of an artistic or semi-artistic nature.* Glass-works, lace goods, earthen wares and mosaics, marble-works, straw plaiting and cutlery are good examples of Italian manufacturing skill. Large-scale manufactures of cotton, woollen and silk goods are important. Wine-making, ship-building, and iron and steel production are also important. Italy occupied an important place in world textile industry and trade. During 1920 and 1930 its position as an importer of cotton was fifth in the world, while it was the world's sixth importer of wool. On the export side, it occupied a still more enviable position. It was the world's

leading exporter of raw hemp and rayon yarn, second of cotton yarn and third of raw silk. The textile industry is the main source of employment in the country. It is estimated that 470,000 persons are employed in the textile industry, while about 380,000 are employed in complementary industries. About 25 per cent. of the textile production is exported to foreign countries. Thus the main key to the rehabilitation of Italian economic life today lies in the rejuvenation of its textile and complementary industries *Italy holds a very important place for the production of artificial textile fibre*, being Europe's largest producer. In 1937 Italy contributed one-sixth of the world's total output of artificial silk. The rise and growth of the artificial silk industry has been favoured by the following conditions (a) abundant supply of electric power, (b) cheap raw materials, (c) skill of the technicians, (d) presence of a large body of workers specialised in silk reeling and manufacturing. The leading markets for Italian rayon are those of Germany, Holland, Denmark, India, Peru, Chile and Brazil.

The railways of Italy are well developed and connect the ports with the interior and Central Europe. The length of railways in 1947 was 23,222 km. The rivers are many; but those which are navigable are confined mostly to the great northern plain. These are the Po, Ticino, Adda and Adige. In the south the only navigable rivers are the Tiber and the Arno. Italy's roads totalled 174,268 kilometres in 1942.

Italy has a little more than 45 millions of people. As too many people *depend on the present resources of the country*, Italy is over-populated. *Italy is poor in natural resources*. There is practically no fuel. Between 9,000,000 and 10,000,000 tons of coal must be brought from outside, besides oil. Production of iron-ore is not sufficient for the requirements of the country. Nor is she self-sufficient in agricultural products. Cotton, wheat and corn must be imported. Thus, there is widespread poverty in Italy.

Milan is situated at the foot of the Alps. It is the greatest city of the northern plain. The silk industry, for which Italy is famous throughout Europe, is localised mainly in Milan. It has also engineering industries. *Rome* is the capital of modern Italy and one of the oldest cities of the world. Its population

exceeds one million. *Naples* is situated on an excellent bay on the south-western coast of peninsular Italy. It is a great ship-building centre. The industries of the port use hydro-electricity. *Turin*, a city of the northern plain, is famous for the manufacture of motor cars. *Trieste* at the eastern end of the northern plain, is an important port. It carries on considerable entrepot trade for the countries of Central Europe. *Fiume*, on the eastern side of the Istrian peninsula, is a great port and a collecting centre. *Genoa* is a great sea port of the northern plain. *Venice* and *Genoa* were once very important trading centres of the world. They acted as entrepôts; rich products of the East were brought to these places for distribution to Europe. Their importance declined with the opening of the Cape Route.

The principal imports of Italy are cotton, iron-ores, wool, mineral oil, coal, timber, sugar, coffee and tea. The exports include fruits and vegetables, cotton, silk and rayon, motor cars, wine, etc.

Poland

Poland was an independent state for many centuries. It was partitioned by Russia, Prussia and Austria towards the close of the 18th century. She became an independent Republic at the end of the First Great War, when the Polish territories hitherto ruled by Germany, Austria and Russia were liberated and united. Her geographical position practically made her a buffer state between Germany and Russia.

The country is surrounded by land-frontiers. It has access to the sea coast only by the Polish Corridor where Danzig and Gdynia stand on the Baltic coast.

Poland has no natural frontier excepting the Pripet Marches on the east and the Carpathians on the south. The climate is continental, and the population is nearly 35 millions, of whom 69 per cent are Polish. The remainder is composed of Ukrainians, White Russians, Jews and Germans.

It is a farming country and over 60 per cent of the total population are engaged in agriculture, forestry and fishing. Rye and potatoes occupy more than half of the total cultivated area.

Although the country is very rich in minerals, only 15 per cent. of the total population are engaged in mining. Upper Silesia produces annually more than 40 million tons of coal of good quality. The Galician oil-field at the foot of the Carpathians yields about 500,000 tons of petroleum annually. Zinc and salt are also found. Upper Silesia also raises lead and iron-ore. The forests, which are an important source of wealth, cover more than one-fourth of the land. The manufacturing industries have developed in the area around Lodz, Bydgoszcz, Silesian coal-field, Białystok, Lwów and Warsaw. Lodz is an important cotton-manufacturing centre. Heavy metal industries are mainly concentrated in Upper Silesia. Warsaw is one of the oldest and most important towns of Poland. From this great city roads and railways radiate to all directions. Gdynia is situated on the Gulf of Danzig, a little west of the mouth of the Vistula. It lies just outside the territory of Danzig and the reason for its development is Poland's dissatisfaction with the establishment of Danzig as a free city which does not meet her requirements. To-day Gdynia is a purely Polish port.

The Baltic States

Immediately after the World War of 1914-1918 four states were created out of the former Russian Empire. These states are *Estonia*, *Latvia*, *Finland* and *Lithuania*. The economic progress in these states is extremely slow. "Roads are poor, railroads few, wages low, poverty widespread and life generally an uphill struggle." Estonia, Latvia and Lithuania are now included in the Soviet Republics.

Estonia is the most northerly of the Baltic States. It occupies a very strategic position on the Gulf of Finland. Until 1918 it was one of the Baltic provinces of Russia. In September, 1939, Russia again established military and naval bases at certain ports of Estonia. Agriculture is the main industry. Efforts are being made by the state to develop manufacture and transport. *Tallin* is the chief port and town.

Latvia. Along with agriculture, cattle-rearing and lumbering are carried on. Fishing is an important occupation. *Riga* is the largest city of the state. It is the chief sea port, noted also for manufactures.

Lithuania. Manufacturing industry is developing rapidly side by side with agriculture. The important industries are flour-milling, distilling, breweries, tanning and saw-works which are run by water-power. Forests provide timber and supply raw materials to match-making and paper industry. Rivers are navigable. *Kaunas* is the seat of the government. *Memel* is the chief port for the outlet of goods.

Finland is bounded by the U. S. S. R. on the east, the Baltic Sea on the south, Sweden and Norway on the west and the Arctic Ocean on the north. It contains a population of about $3\frac{1}{2}$ millions, most of which are concentrated in the southern provinces. More than half of Finland is covered by forests; the chief trees are the fir, pine, maple, ash and oak. Her great wealth of timber is the most important factor in her industrial development. Industry is almost entirely based on forest products. There are more than 450 saw mills in the country. The forest products are paper, newsprint, dry cellulose, mechanical pulp and cardboard. Finland is now the largest supplier of plywood in the world. Forests cover large areas, and provide raw materials for many industries. Agriculture and dairying are the two important occupations. Reindeer supplies milk, meat and clothing. Fishing is of growing importance it is favoured by the existence of many good harbours and indented coast-lines. The Finns are fairly progressive. The country suffers from lack of communication and minerals. The chief exports are timber, pulp-wood and paper. *Helsinki*, the capital, is a port and also a manufacturing centre. *Viborg* is an important port noted for the export of timber. *Turku* is a shipping centre.

Danzig, at the mouth of the Vistula, is a very important port on the Baltic. After 1918, it was separated from Germany, and was declared a Free City by the League of Nations.

QUESTIONS

1 Point out and account for the chief features of the foreign trade of Britain. Name the four most important commodities of import and export trade respectively and the ports which particularly deal with the same. (Cal. Inter. 1934).

2 Describe carefully and explain the importance of the inland waterways of France. (Cal B Com. 1925, 1949).

3 Describe the distribution of linen industry of Northern Europe excluding Great Britain and Ireland. Where do the raw materials come from? To what extent is this industry dependent on the supply of raw materials from India?

4. On an outline map of Europe mark the places containing important deposits of iron-ore. Indicate also the region from which coal is obtained near the iron-ores. (Cal Inter 1928, 1937, 1943).

5 What are the principal seats of ship-building in the United Kingdom and what are the geographical advantages for the industry enjoyed by them? What geographical circumstances tended to deprive the Thames of the high rank it once held in this industry?

(Cal Inter. 1931).

6. Compare Scotland and England as regards (a) physical features, (b) production and (c) distribution of population. (Cal Inter 1931)

7. In what part of Great Britain are all branches of the woollen industry most largely produced? Point out the local conditions favourable to it there and name three of the chief towns engaged in the district. (Cal Inter 1925)

8 Account for the localisation of the cotton textile industry in Lancashire. Also describe the present condition of the British cotton industry. (I. I B 1937, Cal Inter 1936, 1940)

9 Consider the position of France with regard to her supplies of (a) fuel and (b) water-power. (Cal B Com 1932)

10 State briefly the prospects of France with her colonial Empire, becoming a self-supporting economic unit. (Cal B Com 1932)

11 Name the three principal manufacturing industries of Great Britain and give reasons for their location. (Cal Inter 1936, 1949).

12 What are Great Britain's sources of supply of food-stuffs and textile raw materials in normal times, how have these been affected by the war? How is Great Britain trying to counteract the shortage of these commodities? (Cal M Com. 1941).

13 Describe the position of the principal coal-fields of Germany particularly as regards access to navigable waterways. Also name the chief manufacturing industries of these coal-fields.

14 Give an idea of coal and iron regions of Europe, and the industries which have been established there. (Cal Inter 1938).

15. Examine in detail the geographical factors which have contributed to the commercial and political superiority of Great Britain.

(Cal B A 1942)

16 Describe and account for the distribution of population in Great Britain. (Cal. B.A 1942).

17. Describe the position of Continental Europe, excepting U S, S R and the Iberian peninsula, as a self-supporting economic unit. This region was known to be a very large consumer of tropical and sub-tropical food-stuffs and raw materials. How is the demand for these commodities being met now? (Cal B. Com. 1943).

18. Examine the coal resources of Great Britain and show how these have helped the development of her industries

(Cal Inter 1943, 1945).

19 Draw an outline map of Great Britain and indicate the places where her industries are located.

(Cal Inter. 1944).

20. Write a brief note on the development of inland water communications in Germany

(Cal Inter 1944).

21 Suggest a division of France into natural regions Give full reasons for your answer

(Cal Inter 1943).

22 Compare the relative advantages which Great Britain and U S A. have for the development of the steel industry

(Cal. B Com 1947)

23 How is it that the cotton textile industry has grown up both in the United Kingdom and Japan, when both depend on other countries for raw cotton and markets?

(Cal B Com 1947)

24 Describe the nature of exports and imports of Russia

(Cal Inter 1949)

25 Discuss the geographical factors influencing the growth of Britain's prosperity and trade Do you think Britain can still count on those factors?

(Cal B Com 1949)

CHAPTER XI

NORTH AMERICA

North America is the third largest continent, and embraces nearly one-seventh of the land surface of the globe. It has an area of 9 million square miles with a population of 190 millions. The continent almost touches Asia in the north-west, and comes nearest to Europe in the north-east. The situation is ideal for commerce inasmuch as both Europe and Asia can be approached conveniently by waterways. The trade with Asia has been further helped by the construction of the Panama Canal. North America has a variety of climate which accounts for the growth of agricultural products like wheat, cotton, tobacco, sugar beet, sugar-cane, rice, hemp, maize, etc. Minerals are abundant in the western mountains and in the Eastern Highlands. In some of the mineral products, she is the leading producer. Rivers and lakes, on the whole, provide excellent waterways.

The main divisions of the continent are the following :—

- (I) The Dominion of Canada.
- (II) U. S. A. including Alaska.
- (III) Mexico.
- (IV) Central America
- (V) West Indies.

Canada

The Dominion of Canada includes the provinces of Nova Scotia, New Brunswick, Prince Edward Island, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia together with the North-West Territories and the Territory of Yukon. The area of the country is 3·5 million square miles, and the population in 1942 was 11,506,655. In spite of the large size of the Dominion, many parts are not suitable for settlement because of unfavourable climate, relief and soil. Yukon and the N. W. Territories have practically very little scope for development. The population of Canada

is practically concentrated in a fairly narrow zone, bordering the U. S. A. The lowlands lying between the lakes of Erie and Ontario and the St. Lawrence river on the south and



FIG. No. 60

Laurentian shield on the north contain about 50 per cent of the total population of Canada. The greatest density is found in

Ontario along the northern shores of both lakes and along the Laurentian lowland of Quebec. Nearly half the population live in the seventy towns of Quebec and Ontario. The Canadian population consists of many races which, in spite of living side by side, have not yet merged into a single nationality. The principal races are French (28 p.c.), English (26 p.c.), Scotch (13 p.c.), Irish (12 p.c.), and German (5 p.c.). They nourish their own language and individuality. The idea of nationhood is the only cause of happy relations between the races.

The natural resources of Canada are very great. In agriculture, mining, lumbering, fishing and ranching it occupies the most important position in the British Empire.

Fishing is an important industry of Canada, which is carried on in the banks, shores and rivers. Nova Scotia and New Brunswick are the two important states noted for sea-fisheries. The indented coast-line provides plenty of small harbours, the forests supply timber for the fishing boats, and the shallow banks off the coast supply the fish. Cod, halibut, mackerel and herring are the chief catches. On the east coast also is found the lobster fishery—much the largest in the world. On the western side of Canada, river fisheries are very important; in that region salmon is caught in the Fraser, Columbia and Skeena rivers. This region is one of the world's big salmon fisheries with catches sometimes running to as much as 190 millions in a year. Some valuable sea fisheries include herring, cod and halibut on the western side, where Prince Rupert is the chief centre. The rivers and the great lakes of Canada also contain fish which are mostly consumed in the country. The number of persons employed in the fishing industry in 1942 was about 42,000. Canada produces fish three times as much as she can absorb in her domestic markets. Consequently the development of foreign markets for her fish is a matter of outstanding importance. The annual catches of fish from the fishing grounds on the Atlantic and Pacific coasts and inland waters come to about 1,300 million lbs. The landings include some 70 different kinds of fish and shell-fish as well as some non-food species of commercial value.

Although manufacturing industries have developed to a considerable extent in Canada, the country is mainly agricultural. Agriculture is the most important single industry within

the Canadian Economy. Canadian agriculture produces a wide variety of products, but among these the most important group is grain of various types.

There has been a great expansion of agricultural output in Canada in recent years, particularly during the war years of 1940-46. The factors responsible for the expansion are the high level of prices of farm products, good weather, rapid rate of mechanization in farm operations, increased research in processing and preservation of foods and plentiful supply of fertilizers. These factors may continue for long. The extension of railways has also greatly facilitated the cultivation of crops in the arable lands.

PRODUCTION OF CROPS IN 1947

(In 1000 bushels)			
Wheat	..	.. 414,000	Flax .. 6,400
Oats	.	. 371,000	Mixed grains 53,000
Barley	..	.. 149,000	Other grains 5,000
Rye	.	. 9,000	Potatoes . 48,000

The main wheat belt of Canada is about 200 miles wide and 700 miles long and stretches diagonally across the southern parts of Manitoba, Saskatchewan and Alberta. Sowing takes place in May and the harvest is over by September. Recently wheat cultivation in the Dominion has undergone some change. The wheat belts are fast moving to the west. Saskatchewan which supplied 50 per cent of the Canadian wheat even in 1926, now raises less than 30 per cent. To-day, Alberta closely rivals the former. The stabilisation of prices, grading and supply are generally controlled through "wheat pools". Annual production of wheat averages five times the total requirements for domestic use, and this surplus of production over requirements has made Canada one of the leading wheat exporting countries of the world. About three-fifths of the Canadian wheat are exported and the destinations are U.K., U. S. A., Africa and the Far East. The wheat centres are Port Arthur, Fort William, Winnipeg and Montreal. The importance of Canadian wheat is not judged by exports alone. Livestock is also fed by wheat in Canada. Oats are raised mainly in Saskatchewan, Alberta, Ontario, Quebec and Manitoba. Nearly

14 million acres of land were under the cultivation of oats in 1946. Manitoba, Alberta and Saskatchewan account for nearly 90 per cent. of the barley production of the Dominion. A little above 1 million acres of land are under rye cultivation, and the important provinces are Saskatchewan, Alberta and Manitoba of which Saskatchewan alone contributes two-thirds of the total production. Potatoes are chiefly grown in Ontario and Quebec.

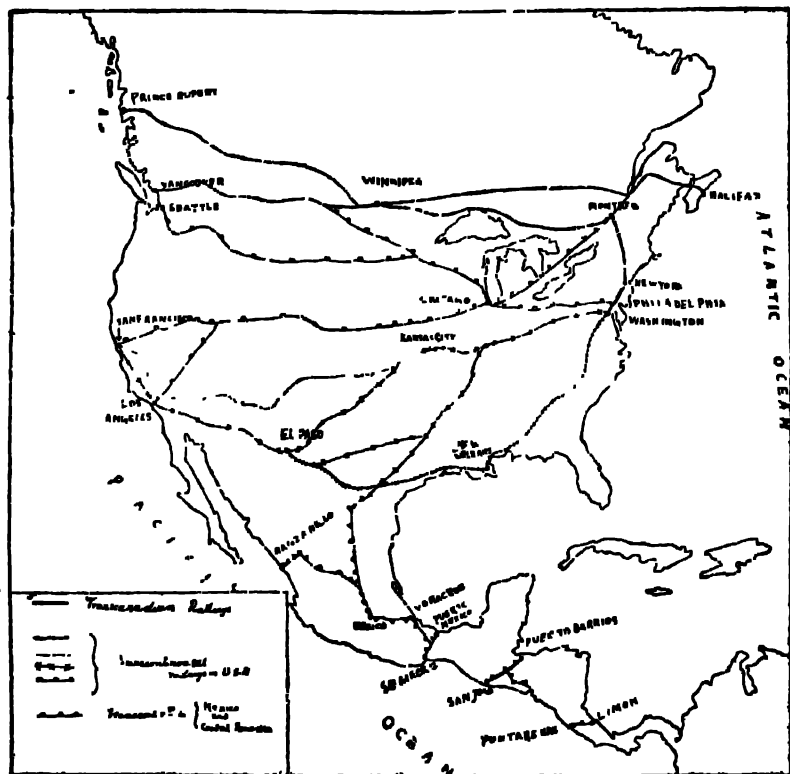


FIG. NO. 61. Map showing the principal railway lines of North America.

Of late, the outstanding agricultural development is the rapid and pronounced expansion in the production of livestock and livestock products to meet the unprecedented export and domestic demand after the World War II. Poultry, meat, eggs, milk and milk products have increased in Quebec and Ontario.

The mineral wealth of Canada so far developed is considerable. Her minerals are vital not only to North American

continent but to the rest of the world also. Nova Scotia, British Columbia, Quebec, Ontario, Alberta and Yukon territory are the chief mining districts. *Canada is the third largest producer of gold in the world and contributes 7 per cent. of the world's total.* The chief gold-areas are British Columbia, Klondike district of the Yukon Territory, Nova Scotia, Ontario and Quebec. *The most valuable nickel mines in the world are at Sudbury in Ontario, which supply 90 per cent. of the world's total.* There are about 40 nickel mines at Sudbury in an area 40 miles long and 15 miles wide. Copper is another valuable mineral which is worked mainly in Ontario, Quebec and British Columbia. Another mineral, of which Canada supplies 95 per cent. of the world's total, is asbestos, mined in Quebec. Silver, zinc, lead and cobalt are the other minerals. Iron ore regions are mostly found in Texas, Ontario, Nova Scotia, Alberta, Saskatchewan, Rocky mountains and Vancouver Islands. The coal-fields of Nova Scotia alone furnish about 40 per cent. of the Canadian output. Crude oil and natural gas are obtained from Alberta at Medicine Hat and the Mackenzie basin.

Nearly one-third of the total area of Canada is forested and in all these, except in the north where movement is difficult, lumbering is an important industry. *Canada ranks among the greatest exporters of timber in the world.* It is the only country in the British Commonwealth with a large exportable surplus of construction lumber. Her only serious competitor in the whole world in that commodity is Scandinavia. More than one-half of Canada's lumber is supplied by British Columbia where the predominating species are Douglas, Fir, Hemlock, Spruce, Red Cedar and Pine. Structural timbers are obtained from the pines and hemlock, while cedar is important for exterior work. Spruce is used for pulp in paper-making.

LUMBER PRODUCTION

(in 000 of feet Broad measure)

1938 3,768,351	| 1947 5,392,595
------	----	--------------	------	----	--------------

The northern forest belt is commercially important on the eastern side, especially in Quebec. The lumbering industry is favoured in Eastern Canada by a multitude of rivers, the very severe winters and floods in spring when the thaw comes. The

timber is cut in winter and is easily dragged over the snow and ice by horses to the nearest convenient stream. The trees are bound together to form a raft and when the stream thaws the rafts are floated down the stream to the saw mills. The conservation of forest is strictly maintained in Canada. No one is allowed to cut timber without licence, and young trees are protected. The fire-protection services maintain watch-towers for reporting outbreak of fires. The great northern forests also give refuge to many fur-bearing animals. Furs and pelts of these animals are in great demand in America and Europe.

The buyers of Canadian lumber are in order of importance, U. K., U. S. A., Netherlands, Union of South Africa and Australia.

Canada is fortunate in having large navigable waterways. St. Lawrence and the Great Lakes provide 2,000 miles of magnificent natural waterways to Canada, although they are frozen during the winter months. Large ocean vessels can pass about a thousand miles up the river St. Lawrence to Montreal, where goods are transhipped to smaller vessels. Navigation is rendered difficult at the mouth of the St. Lawrence because of constant fogs and the rapidity of the current. In addition to this system, there are many large lakes and navigable rivers. The Dominion has more than 1,600 miles of canals which connect the rivers with the lakes.

The water power development of Canada is widespread throughout the Dominion. Water power supplies more than 97½ per cent of the electricity generated in Canada. The distribution of low cost hydro-electric power has been a vital factor in the rapid industrialisation of the country and in the attainment of a high standard of living.

The progress of Canada is due to the result of a great development of the railways, particularly in the west and north-west. Rail transportation is the main co-ordinating factor forming a background for all the accomplishments of production. Canada has now two great railway-systems: (i) The Canadian Pacific Railways, and (ii) the Canadian National Railways. Each system has a trans-continental line and a network of innumerable branch lines which have played a great role in opening up the agricultural areas of the west. The railways of the Dominion are connected with those of the U. S. A.

The manufacturing industries are rapidly developing. The increase of agricultural population, extension of railways, mineral wealth, supplies of water-power and the large produce from agriculture and forests will in future make Canada a great industrial country. Already her manufactured products far exceed in value the unmanufactured farm products. Though she imports from abroad some of her requirements in railway materials, farming machines, iron and steel goods and textiles, yet signs are not wanting to show that this dependence with the further expansion of the manufacturing industries will be over in the near future. Canada's vast natural resources give rise to industries like fish-canning, flour-milling, butter and cheese-making, saw-milling and paper-making. Manufactures of leather, cotton and woollen goods and the construction of iron and steel goods are the other important industries. The development of the pulp and paper industry in Canada is due to readily accessible resources of wood of superior quality for the manufacture of both paper and rayon, well-distributed water-powers and supplies of clean, fresh water.

THE PRINCIPAL MANUFACTURING INDUSTRIES*

		1941	
Groups of Industries		No of Establishments	No of Employees
Vegetable products ..	..	5,948	113,753
Animal products ..	..	4,240	82,131
Textile products ..	..	2,104	156,892
Wood and Paper ..	..	9,420	179,967
Iron products ..	..	1,759	253,701
Non-ferrous metals ..	..	579	73,450
Non-metallic minerals ..	..	773	28,829
Miscellaneous Industries ..	..	621	18,441
Total ..		25,444	907,164

About 52 per cent. of the total value of exports consist of manufactured goods. Raw materials account for 26 per cent.

Newsprint paper, wood pulp, meats, wheat, timber, cheese, fish, silver, bacon, gold, copper, fruits, automobiles, vehicles,

* The Statesman's Year Book, 1944.

farm implement and fertilizers, are the chief exports. The principal imports are iron and steel goods, woollen and cotton goods, petroleum, coal, tin, rubber, cotton and tropical and sub-tropical products. Great Britain had the largest share in the foreign trade of Canada till 1914, but at present the U. S. A. occupies the privileged position. This is because the Canadians largely employ American machinery and adopt American techniques in mining, agriculture and industry. Moreover, the Canadian consumers have much the same tastes as American consumers.

Halifax is the capital and chief sea port of Nova Scotia. It possesses a fine harbour and is seldom closed by ice during winter. The harbour is six miles long and one mile broad. It provides accommodation for large vessels. Although it is chiefly a trading centre exporting fish and minerals, a considerable progress in manufactures has taken place recently, especially in sugar-refining and cotton-spinning. *Charlottetown* is the capital and chief town of Prince Edward Island. Fox-farming is an important industry. *Montreal*, in Quebec, is the largest town of the Dominion. It is great in commerce, manufactures and industries. *Toronto*, in Ontario, is a rival of Montreal. It is the most important lake port. *Ottawa*, in Ontario, is the capital of Canada. It is a river port and has considerable timber trade. It is the centre of the greatest water-power of the Dominion. *Vancouver*, in British Columbia, is an important port on the Pacific coast of Canada. It possesses an excellent harbour. Wheat, timber and minerals are the chief exports. *Winnipeg*, in Manitoba, is the seat of the Provincial Government. It is the greatest wheat centre of the world.

Newfoundland

The island of Newfoundland is a separate unit of the British Empire and is the oldest colony of England. Geographically it may be treated as a continuation of the Eastern Highland regions of Canada. The island itself is nowhere very high. The climate is not attractive, it is rather damp. The damp climate and poor soil of the island retard agriculture.

The population is very scanty, being just over 250,000. Much of the island is forested. Fishing is the most important

industry, on which the prosperity of the island depends. Nearly one-fifth of the total supply of fish is exported to each of Brazil, Portugal, Italy and Spain. Considerable quantities go to Canada, Greece and the West Indies. Paper manufacture and iron-mining are the two other economic activities. Paper accounts for over 25 per cent. of the exports.

St. John's is the capital and the centre of fishing industry.

The United States of America

The United States of America is the richest country in the world. No other country rivals the U.S.A. in wealth. *Certain conditions combined to help the country to attain commercial greatness.* These conditions are: (a) the racial and social inheritance of the people, (b) the excellent climate, (c) the vast natural resources, and (d) a moderately dense population. The original colonists came from Europe, and as such, they brought with them high culture, civilisation and commercial ideas. The climate of the country, generally speaking, is favourable to the activity of mind and body. The natural resources are abundant in minerals, forests, fish and agriculture. She has a surplus of most essential foodstuffs. She is rich in coal, iron, petroleum, copper, and cotton. *The great natural resources, on the one hand, and the moderately dense population on the other, have helped the people to maintain a high standard of living, and there is practically no struggle for existence.* The United States covers more than 5 per cent. of the land surface of the globe. It is slightly less in area than Europe. The location of the U.S.A. is such that it includes the greater portion of the best parts of the North America in respect of climate, production and commerce by providing fertile plains in the whole of eastern side, and access to the oceans by the east, west and south. Further, the development of industries in the U.S.A. was aided by its long distance from Europe. The internal rivalries and wars of Europe could not arrest the development of this young country. The U. S. A. for a long time tried to remain aloof from European affairs and adopted a policy of "America for Americans". At present she has given up the policy of isolation and is playing a leading role in the politics of Europe.



FIG. No 62 Map showing the chief economic products of the U. S. A.

The U. S. A. Government always shows a sympathetic attitude towards industries. Mention may be made in this connection of "New Deal" of Roosevelt which aimed at conserving and developing natural resources, encouraging international trade, providing employment for the workers and abolishing child labour and sweated labour.

In spite of there being great progress in various directions, the U.S.A. Government has not yet been able to solve the colour problem. The Negroes, who form about one-tenth of the population in the United States, are treated as though they are members of another and a lower, almost a sub-human, species. Adequate education, just wages and the right to vote are denied to them. Some improvement in the position of the Negroes, however, has been made after the war.

The land area of continental U.S.A. is 2,977,128 square miles. According to 1947 census, the population is 145 millions. The average density of population in 1940 was 44 per square mile. About 13 millions are negroes.

The United States is a federation of forty-eight States, each of which is sovereign and equal. In practice, however, the powers of individual States are declining and those of the Federal Government increasing.

The United States is the leading agricultural producer in the world. But in recent years the importance of agriculture has declined considerably. A century ago, 80 per cent. of the people depended on agriculture; in 1900, it was 37 per cent., and in 1944, it was only 20 per cent. At present only about 10 per cent are engaged in agriculture.

In 1935-39, the composition of agricultural output in U.S.A. was as follows:

		P C.				P C.
Meat animals	..	27	Poultry	..	..	12
Grains	..	13	Milk	..	..	22
Cotton	..	9	Fruit	..	..	3
Tobacco	..	3	Sugar	..	..	1
Potatoes	..	4	Oil crops	..	..	2

Wheat is the principal crop of the country. The most productive belt is where there is a light, early summer rainfall and

a hot semi-autumn. These conditions are found in Montana, Washington, Idaho, Nebraska, Texas, Oklahoma, Kansas, North Dakota and Illinois. The California valley with its Mediterranean climate is also suitable for growing wheat. In 1946 the U.S.A. raised 1156 million bushels of wheat. The production of wheat in 1947 was estimated at 1356 million bushels, highest so far recorded. But the production is likely to decrease in future as the prospects of European, Argentina and Australian crops improve. The next important produce is maize: Although the area sown is far larger than the area under wheat, it is not important for export, as most of it is either used as human food in the south or as fodder for stock of cattle. The maize crop requires rather hot and wet summer; so the maize belt lies to the south and east of wheat belt. Middle Mississippi valley is very important for this crop; it is produced in the States of Iowa, Illinois, Indiana, Missouri and Eastern Kansas. The markets are St. Louis, Kansas City and Chicago. In 1947, the production of maize was 2401 million bushels. The next important crop is oats used mostly for the manufacture of breakfast food. Cotton is grown in the south of the maize belt. Eastern Texas, with its rich black-prairie soil, is important for the growth of cotton. It is produced also in Arkansas, Alabama, Mississippi, Georgia and Carolina. Georgia and St. Carolina grow "Sea-Island" cotton. *The U. S. A. produces 60 per cent of the world's supply and Western Europe depends for 80 per cent of cotton on America.* As a by-product cotton-seed is valuable, which is used either for the manufacture of oil or for cattle food. Next comes tobacco. The leading tobacco regions are Kentucky, Virginia, North and South Carolinas and Tennessee. The leading port for shipment is Richmond in Virginia. The U.S.A. produces 40 per cent. of the world's tobacco. The other minor crops are rice and cane-sugar.

In the output of minerals the U. S. A. exceeds any other country in the world. The chief mineral products are coal (Anthracite $\frac{1}{6}$, Bituminous $\frac{5}{6}$), petroleum, natural gas, cement, salt, iron ore, silver, gold, copper, zinc, bauxite and lead. The U. S. A. produces more coal than the whole of Western Europe. There are five important **coal-producing areas** in the U.S.A. :—

(a) The most important area is the Appalachians where

coal-fields extend from Pennsylvania to Alabama. This area raises nearly three-quarters of the U. S. A. output.

(b) The second important area is confined to the *eastern interior* and includes Indiana, Kentucky and Illinois.

(c) The *western interior* coal-field extends from Iowa through Kansas and Missouri to Oklahoma.

(d) The Gulf coal-fields extend from Southern Alabama to Texas. This coal is lignite.

(e) The western coal-fields are scattered throughout the mountain States.

But these mines are little developed on account of distance from the sea and industrial areas, the mountainous character of the relief and the sparse population. There are no big coal-fields on the Pacific coast. The next mineral is petroleum. The U. S. A. raises more than 60 per cent of the world's total petroleum output. There are four **oil-bearing areas** :—

(a) The most productive region extends from Kansas through Oklahoma and north-eastern Texas into Louisiana. Texas and Oklahoma account for the major portion of the output.

(b) The Appalachian belt includes an area from New York State to Kentucky. Its output is decreasing.

(c) Ohio, Indiana and Illinois, at one time large producers, do not at present yield much oil.

(d) The western belt includes California, Colorado, Montana and Wyoming. California produces as much as Texas.

The third mineral of importance is copper, which is found in the Rocky mountains. The greatest output is in Arizona, followed by Montana; New Mexico is also important. Zinc is produced mostly in Missouri; other states producing it are Kansas, Oklahoma, Montana, New Mexico and Wisconsin.

Gold is found in California, Colorado, Arizona, New Mexico, Utah and Nevada. Silver comes from Arizona, Nevada, Colorado and Utah. About one-fourth of the world's silver and one-ninth of the gold come from the U. S. A. Gold and silver are usually found in close association. Black Hills district in South Dakota is the largest producer of gold in the U. S. A. The mines of the district were discovered in 1876. California,

also known as "Golden State", has large deposits of gold on the western slope of the Sierra Nevada mountains. Iron is obtained from Minnesota, Wisconsin and Michigan, and is worked chiefly in *Chicago*, *Buffalo* and *Pittsburg*.

The U. S. A. is the leading supplier of aluminium in the world. The ores are usually found in the south of the Appalachian mountains. As a supplier of non-ferrous metals like copper, lead, zinc, silver, gold and aluminium, the U. S. A. occupies a dominant position. She supplies about half of the world's copper, half of the lead, half of the zinc, one-fourth of the silver, and nearly one-fourth of the aluminium. In recent years she has also been the world's largest producer of each of these metals with the exception of gold, in spite of the fact that she suffers from certain very definite disadvantages. Her labour is dear; her producing areas lie far inland—away from her industrial areas, and her transport costs are high. The U. S. A. is deficient in domestic supplies of manganese ore. Small deposits are scattered throughout the States, but only a very few are of economic importance, and even these require protection by import tariff to keep them open. The important manganese fields are in Montana.

The most recent feature in the mining industry of the U. S. A. is the constant decline in the output of metallic ores due to increased consumption during the last two years. Copper resources are estimated to last 10 years more, and the country is already importing to meet 50 per cent of copper requirements. Imports now meet about 30 per cent. of internal requirements in antimony, asbestos, mica, manganese and tungsten. About 50 per cent. of bauxite for aluminium must be imported. Chromite, platinum, nickel and tin are to be wholly imported.

Hydro-electricity plays a very important part in the industries of some areas in the U. S. A. Towns on the "*Fall line*" use water-power to drive their machinery.* The aluminium manufacture in Massena (New England State) and flour-milling in Minneapolis are dependent on water-power.

* Rivers flowing through the South Appalachian region descend by falls over the Piedmont plateau. The *fall line* so formed plays a big part.

The foremost industry of the U. S. A. is Iron and Steel production, and the States which are highly developed in this direction are Western Pennsylvania and Eastern Ohio. This is due to the fact that there are vast coal-fields in this area ; moreover, there is a good market for the manufactured goods, and iron ore required is brought from the Lake Superior District by cheap means of transport. The ore from this place goes to the lake ports, from where it is carried by railways to the manufacturing centres, such as Pittsburgh and Chicago. The second area of importance is Alabama which, in spite of having local supplies of coal, iron ore and lime stone, suffers from a handicap of being situated at a considerable distance from markets and ports. The region produces the cheapest steel in the world and the chief centre is Birmingham. Specialisation is the feature of the iron and steel production in the U.S.A. In the agricultural districts, agricultural machinery is produced and Chicago is the chief centre for the Middle West. Another centre of equal importance for the manufacture of agricultural machinery is Milwaukee. In the textile districts of New England there is a great demand for machinery and Worcester is the chief centre of textile machinery. New York, where there is a great demand for electrical machinery on account of water-power, produces electrical engines and machinery. The great railway centres of the U. S. A., such as Philadelphia, Chicago, Pittsburgh, St. Louis, produce locomotives and have large railway workshops. Ship-building is carried on in the ports on the Atlantic, the South Pacific and the Lake districts. Detroit is the greatest centre in the world for automobile industry. In the fruit-growing districts, tin plates are made for the canning industry.

OUTPUT OF IRON AND STEEL IN U. S. A.

1945

(In million tons)

Pig Iron	..	.. 49	Structural Shape	..	4
Steel and Ingots	..	.. 72	Bars and Concrete	..	1.3
Rails	..	.. 20	Skelp and Strip	..	5
Plates and Sheets	..	.. 17.2	Others	..	12
Wire rods	..	.. 4			

The second important industry in the U. S. A. is the textile industry, in which the cotton manufactures take the lead. The first home of cotton industry lay in the New England States. These States have moist climate, plentiful supply of water-power, cheap cotton from the south, cheap coal from Pennsylvania and easy access to interior markets. There is also a large centre at Philadelphia. In the Southern States of Alabama, Georgia and Carolinas, the industry is of recent growth and produces coarse cloth for China and Canada markets.

• Woollen industry has made rapid advance in the North-East with Philadelphia as the centre. Wool is imported from Australia and Argentina to Boston, the greatest wool market, from where it is distributed to the New England States. America is noted for the manufacture of silk which is chiefly carried on in New York, New Jersey and Pennsylvania.

Pulp and paper manufactures are important in the New England States on account of timber and water-power. The greatest centre of flour mills is *Minneapolis*. The other industries carried on are sugar-refining, meat-canning (in the States of Maine and New York), fruit-canning (in California) and fish-canning (at Baltimore). In recent years the U. S. A. has made great progress in synthetic rubber production. More than 400,000 tons of synthetic rubber is being produced annually.

The growth and development of the transport system of the U. S. A. are remarkable. Of all the countries in the world, the U. S. A. has the largest mileage with its surface covered with a network of railways linking up the interior with the coasts and uniting the distant east and west, and north and south. The U. S. A. possessed about 243,000 miles of railroads in 1943. The mileage comprises somewhat more than 45 per cent. of the world's total. There are three regional groups of railways. The Northern Group serves the north-eastern states and handles about 45 per cent. of the traffic. The Southern Group, with 20 per cent. of mileage, deals with some 18 per cent. of the traffic; the Western Group, with almost 55 per cent. of the mileage, handles 35 per cent. of the traffic. The trans-continental routes from the west to the east are of great importance. They carry the products of the Pacific States and of the central plain to the industrial east. From New York one line (the Northern Pacific Railway) goes to Chicago along

the Mohawk Gap through Buffalo. From Chicago the line proceeds to Seattle on the Pacific coast *via* Milwaukee and St. Paul. Another line (the Union Pacific Railway) from Chicago, after crossing the Rockies proceeds towards San Francisco and thence to Los Angeles. New Orleans is an important centre of transcontinental route. A railway line (The Southern Pacific Railway) starts from New Orleans and continues to Los Angeles.

Of the two big natural means of inland transport, *viz.*, the Great Lakes and the Mississippi-Missouri system, the first—the Great Lakes—though of great importance for the eastward and westward movement of grain and iron ore and of coal and manufactured goods respectively, suffers from a handicap due to its situation at different levels necessitating



FIG No 63 Map showing the location of Philadelphia.

the construction of canals and locks which limit the size of ore and of coal and manufactured goods respectively, suffers from a handicap due to its situation at different levels necessitating the construction of canals and locks which limit the size of vessels for through journey. Of the canals, thus constructed, the Soo Canals carry more traffic than the Panama and the Suez Canals combined. Rapids between the Lake Superior and the Lake Huron made it necessary to construct the Saint Marie or Soo Canals. The enormous value of the Great Lakes system is, however, mainly due to its location in the very centre of the temperate zone and to its natural and artificial outlets facing eastwards towards Europe across the busy North Atlantic.

The Mississippi-Missouri system, providing navigation as far inland as the great Falls in the State of Montana, has not been so useful as it seemed at first. Navigation is greatly

hindered by ever-shifting mud bank, necessitating the construction of the famous "stern wheel" boats. The river not only meanders in its lower course over its flood plain but it flows also in a north-south direction into the Gulf of Mexico. Thus the Mississippi is still mainly used for very slow local traffic notwithstanding the difficulties overcome by the opening of the Panama Canal.

The U. S. A. handles a large volume of air-traffic, larger than the total of all other countries. The efficient system of beacons, direction-beacons and well-equipped air-ports have helped the working of navigation. The lines are linked with those of Canada and South America, and there are also trans-Atlantic and trans-Pacific services.

The class of goods imported by the U. S. A. is mostly raw-materials of luxury articles. Japan exports silk and tea ; India, jute, hides and tea ; Malaya Peninsula, rubber and tin ; Philippine, sugar and hemp ; China, beans and silk ; Australia, wool ; Canada, paper and nickel. Raw cotton, petroleum and tobacco figure largely in the export trade of the U. S. A. The other exports are iron and steel goods, machinery, motor cars and aircraft.

The trade between the U. S. A. and Europe is mostly one-sided. Europe imports cotton, grains, oil, meat-products and tobacco. The only export from Europe is luxury goods.

TRADE CENTRES AND PORTS.

New York is the second city and the third port in the world. Its importance is due to a combination of factors, such as its natural harbour, its nearness to Europe, its easy access from inland cities, and its situation in the midst of the area producing either raw materials or manufactures. *Chicago* has got a natural advantage of communication. It is situated in the area which produces a large quantity of grain and live-stock ; it is at the head of the lake navigation. *Chicago* is the greatest railway centre as well. *Philadelphia* has a fine natural harbour. Its nearness to the regions of coal and raw materials makes it an important industrial centre for woollen and industrial goods. *St. Louis* is situated in the prairies between the lakes and the Gulf of Mexico. It is surrounded by grain, cattle,

cotton and tobacco regions. It is a great railway centre and a manufacturing town. *Pittsburg* is the largest iron centre in the world on account of its nearness to coal, iron ore and limestone. Moreover, it is situated at the junction of navigable rivers. It has also got some special advantages for glass-making industry on account of the presence of natural gas. *Boston* is an important Atlantic port. It is also the receiving and distributing centre of the north-eastern industrial States. *Galveston* is situated on the mouth of the Galveston Bay and is the natural outlet for the bulk of the trade of the south-western States. It is the greatest cotton-shipping port in the world, and its total trade places it second to New York only in the U. S. A. *San Francisco* is the only natural harbour on the Pacific coast and is the sole outlet for the products of the Californian valley. The opening of the Panama Canal has made it important. *Kansas* is a livestock market and is situated between maize and cotton areas. It has important industries, such as meat and tanning. *New Orleans* is the greatest cotton and wheat exporting centre in the world.

Mexico

The geographical situation of Mexico is highly favourable to commerce, as it faces both the Atlantic and the Pacific Oceans, and is a neighbour to the U. S. A.—the greatest industrial country in the world. The country would have been great in commerce and manufactures, were it not for political and social conditions. The Government is weak. Revolutions and banditry are frequent.

The total area of Mexico is 763,944 square miles, and the population in 1947 was 22·7 millions.

About one half of the land lies in the temperate zone and the other in the torrid zone. The climate, therefore, varies from tropical to temperate from south to north. The variety of climate gives rise to a variety of vegetation. Mexico is capable of producing almost every variety of vegetable product. But only about 10 per cent. of the land is well suited to agriculture. Much of the land is poorly managed and badly cultivated. If modern methods are adopted, Mexico may produce many times its present volume of crops. Maize and coffee are the chief

crops. Sisal hemp is also cultivated extensively in the grass-lands of the north.

Rainfall occurs in summer, but the quantity is not sufficient for agriculture. Therefore, it has been necessary to develop irrigation works.

Mexico is a store-house of minerals—petroleum, silver, lead, zinc, gold and others. The Western Range is volcanic and this partly accounts for its wealth of minerals. Mexico is the leading producer of silver in the world, a producer of petroleum and an important producer of copper and lead. In the past it was one of the great sources of gold. Mineral products constitute about 80 per cent. of the exports of the country. The manufacturing industries are carried on to supply the home market. Cotton, sugar, cigar and cigarette are manufactured in great quantities for export. Because of the mountainous nature of the relief, transportation is expensive. Good roads are almost unknown except in a few larger cities. The Gulf Coast of Mexico has no first class harbour; the harbours on the Pacific sides are, however, better, but as yet their commerce is small.

Mexico is the capital and is an industrial centre for the production of leather and leather goods. *Tampico* and *Vera Cruz* are the two ports.

QUESTIONS

1. Discuss the position of Canada as :
 - (a) An agricultural country
 - (b) A producer of minerals.
2. Explain why the wheat belt is moving towards the west in Canada
3. Describe the principal agricultural regions of the U. S. A.
4. "Though young in the industrial field, U. S. A. has made rapid progress in the matter of industrial development." Give your reasons as to how it has been possible for it to make such progress.
(Cal. Inter. 1936.)
5. Examine the present position of the iron industry in U. S. A.
(Cal. Inter. 1936.)
6. Discuss the geographical factors that have influenced the distribution of wheat, maize, cotton and tobacco in North America. Discuss also the trade in cotton or wheat.
(B. Com. 1929.)

7. Examine the influence of geographical factors on the localisation of the iron and steel industry in U S A. (Cal. B. Com. 1931.)
8. Describe the mineral resources of Mexico and discuss the chances of their full development. What do you know of the attempt in the country to check foreign exploitation of these resources? (B Com. 1928.)
9. Carefully describe the position of the chief coal and iron districts of North America, paying special attention to the means of communication for bulky trade. (Cal B Com 1924.)
10. Locate the chief industrial and mineral regions of North America and show how they are linked up. (Cal Inter 1938.)
11. State and comment on the situation of the chief coal-fields and the chief manufacturing areas of the United States. (Cal Inter 1931.)
12. Examine and estimate the coal and petroleum resources of U S A. (Cal Inter 1931.)
13. What are the chief mineral products of the United States of America and where they are obtained? (Cal Inter 1940.)
14. Name the commodities of which the U S A. is the largest supplier in the world's markets. What other parts of the world are also important producers of these commodities? (Cal B Com. 1940.)
15. Describe the recent development in transport facilities that have given impetus to agricultural production in Canada. (B Com. 1930.)
16. Indicate carefully the coal resources of the U S A. How have they helped the development of the industries of the country? (Cal Inter 1944.)
17. Compare the relative advantages which Great Britain and U S. A. have for the development of steel industry. (Cal. B Com. 1947.)
18. Comment on the situation of the chief coal-fields and the chief manufacturing areas of the United States. (Cal. Inter 1949.)

CHAPTER XII

SOUTH AMERICA

South America is somewhat smaller than North America and occupies the fourth place as regards size among the continents. In proportion to its area, South America has a shorter coast-line than any other continent except Africa. The coast is singularly devoid of indentation. Only in the south-west, it is somewhat broken. The west coast is steep and high with only one opening, the Gulf of Guayaquil. The east coast is everywhere low and shelving.

South America may be divided into six natural regions—three highlands and three lowlands. The former are (a) the Andes, (b) the highlands of Brazil, and (c) the highlands of Guiana. The lowlands are the basins of (a) the Orinoco, (b) the Amazon, and (c) the Parana Paraguay.

The important rivers are the Amazon, the Orinoco, the Plata and the Colorado. The Amazon is 4,000 miles long, and is the greatest river in the world. Its slope is extremely gentle. It is navigable by large ships up to 1,000 miles from the mouth, and by small boats up to the foot of the Andes. The Amazon with its tributaries provides 50,000 miles of navigation. "The value of the navigation of the Amazon is diminished by the paucity of population and products in the region through which it flows and by the similarity of its products in nearly the whole of its navigable course." The Orinoco in the north is navigable for more than thousand miles. The Parana system is very important in the continent from the point of view of commerce. It flows by the heart of Argentina, Paraguay and Southern Brazil. The Parana and the Uruguay waters drain half the continent and join as the Riode La Plata river.

Nearly four-fifths of South America fall within tropics and, therefore, the greater part of the continent has a tropical climate. The temperate belt lies to the south beyond 30° latitude. Continental climate is absent. The population is still very scanty, being a little over 65 millions.



FIG. No. 64. Map showing the political divisions of South America.
Note the absence of ports in the southern peninsula

THE HINDRANCES THAT HAVE CHECKED THE DEVELOPMENT OF SOUTH AMERICA

I. Race is a dominant issue in South America. The majority of the white people at first came as soldiers and adventurers. They came not to settle in South America but to

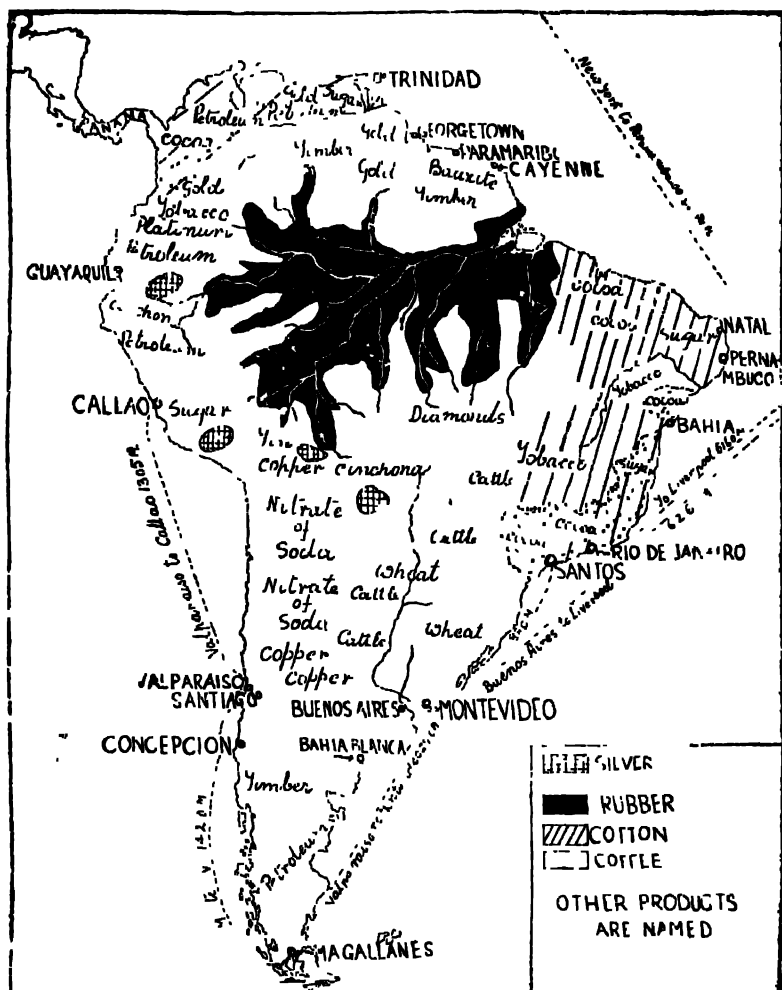


FIG. No. 65. Map showing the economic products of South America.

plunder the continent. In every State they interbred with the Indians. To-day, $\frac{3}{4}$ of the population consist of Indians,

Negroes and Mestizos (mixture of white and native). The white are prominent only in Chile, Argentina and Uruguay.

II. Bad climate and the prevalence of deadly fever make the people inert, passive and idle. The death rate is also very high. Fortunately it is possible now to conquer tropical diseases with medicine, and South America is receiving the benefits of the results of scientific progress.

III. The *national differences* are also responsible for the political and economic backwardness of the continent. The terms "savages", "niggers" and "barbarous" are often used by the people of one Republic against those of the other. To this must be added the weakness of Government institutions. Instability of Government is one of the worst handicaps to the development of a country in the modern world, where progress and prosperity depend essentially upon credit. In all the Republics of South America political disturbances are frequent, property is insecure, internal accumulation of capital is hindered, and foreign investors generally feel shy to invest money in industries.

IV The difficulties of communications Roads are generally poor and the railways have not developed to a great extent except in a few Republics

V. The shortage of coal Rich in almost every other mineral, South America is poorly provided with coal deposits. The poverty of South America in coal compelled the continent to devote its attention to the production of raw materials and agricultural and pastoral produce. But the discovery of petroleum in Peru, Venezuela, Argentina, Equador and Columbia has brought a new industrial life in the continent. Hydro-electric power can also be developed to a great extent as the continent is full of rivers and waterfalls. Paucity of labour and high wages are the present obstacles

VI. South America is a producer of raw materials Most States are one-crop or one-product countries, and they live on export. South American trade depends on Europe which takes more than 60 per cent. of the continent's export. Therefore, whenever the European demand for South American goods falls as a result of war or blockade, the consequence is disastrous.

There are 12 political divisions in South America.

- | | |
|--------------------|----------------|
| 1. Panama. | 6. Brazil. |
| 2. Columbia. | 7. Peru. |
| 3. Ecuador. | 8. Bolivia. |
| 4. Venezuela. | 9. Chile. |
| 5. Colonial Guiana | 10. Argentina. |
| (a) French. | 11. Paraguay. |
| (b) British | 12. Uruguay. |
| (c) Dutch. | |

All these countries, with the exception of Colonial Guiana, are politically "democratic".

Columbia occupies the fifth place among the States of South America in respect of size. It has an area of 440,000 square miles with 8 million population. The bulk of the population lives at altitudes from 4,000 to 9,000 feet above sea level. The country occupies a favourable geographical position facing the Atlantic and the Pacific oceans. Although the soil is fertile in Columbia, the agriculture is not very important. Mild coffee, rice, banana, rubber fibre and sugar cane are grown for domestic consumption. Livestock includes cattle, pigs, horses, sheep, goats and mules. The mineral wealth of the State is very great. Gold and silver are found in considerable quantities. Iron, coal and platinum also are obtained. In various parts of Columbia petroleum is found and the rapid increase in its output has made Columbia the second oil-producing country in South America.

The means of communication are exceedingly bad. Roads are absent and the railway mileage meagre. Climate conditions, coupled with the obstacles to communication between different parts of the land, have retarded the economic development of the country. The capital is *Bogota* situated at a height of 8,000 ft. above sea level and enjoys a healthy climate.

Venezuela. The Republic of Venezuela, though an agricultural country, is fairly rich. Venezuela has an area of 350,000 square miles with 3.5 million population. There are three distinct zones of production—the agricultural, the pastoral and the forest zones. The agricultural products are wheat, rice, tobacco, maize, coffee, sugar cane, cotton and beans. One-fifth of the population is engaged in agriculture. The livestock

includes 4 million oxen, 1 million goats, 100,000 sheep, 400,000 horses and mules and 360,000 pigs. Among mineral products gold, copper, petroleum, coal and iron are important. In recent years Venezuela has become the third oil-producing country in the world furnishing 9 per cent. of the total. The important towns are *Caracas* (capital) and *Valencia*, and the ports are *La Guana* and *Porto Cabello*.

Equador is one of the smallest and poorest South American States. Equador is situated in the north-west of South America, with about one-fifth of its area lying north of the Equator. It embraces nearly 280,000 square miles with 3 million people. The Whites form only 8 per cent. of the population. The average density of population per square mile is 12. The main crop is cocoa, on which the greater part of the country's prosperity depends. Next in importance are rice, ivory-nuts and coffee. The State has considerable mineral wealth, but so far mining operations have not developed much. Oil-deposits are important. Equador is the chief producer of "Panama" hats. The capital *Quito* is situated at an elevation of 9,000 ft. *Guayaquil* is the chief sea port.

Bolivia. The economic development of Bolivia is slow and small. The population is only 3,000,000. Lack of labour is proving a great handicap to the development of industry. The means of communication are bad, and the State has no port of its own. Agriculture, stock-raising and mining are the chief industries. Tin, copper, silver and gold are the principal mineral products. Bolivia contributes more than 20 per cent. of the world's total production of tin. Sheep, Alpacas and Llamas are reared extensively. The chief agricultural products are coffee, cocoa, rice, sugar and tobacco. About 90 per cent. of the people are Indians. The political power is concentrated in the hands of the tin merchants. *La Paz* is a commercial centre and the seat of the government. The constitutional capital is *Sucre*.

Chile. The Republic of Chile is one of the most progressive States of South America. The population is about 4,300,000. The Republic ranks seventh in size among the States of the continent.

Desert conditions prevail in the northern side of Chile. Nevertheless it is a centre of great industrial activity. Great

deposits of nitrate of soda are found, the export of which provides one of the chief sources of Chilean revenue. The Republic alone supplies practically all the world's requirements of natural nitrate of soda which is used as a fertiliser, in chemicals and explosives. Recently the introduction of synthetic nitrates has greatly affected the Chilean nitrate industry. Copper, gold and silver are also obtained from Northern Chile. Copper is the most valuable export and about 15 per cent. of the world's production is obtained from the Republic.

Central Chile is very important from the agricultural point of view. Here the Mediterranean type of climate prevails. It is the most highly developed and most densely populated region. All the agricultural products are sent to Northern Chile to meet the demand of the large mining population there. Both water-power and coal are abundant. The manufacture of wine is also an important national industry and the Chilean wines are much in demand both at home and in the neighbouring states; some are also exported to Central Europe. Southern Chile provides suitable grazing ground for cattle and sheep. The forest resources have been little exploited. The chief town is *Santiago*. The two important ports are *Valparaiso* and *Iquique*.

Brazil occupies nearly half the area of the continent and rivals the U. S. A. in respect of size. In 1940 the population of Brazil was 41 millions. The highest density of population is in the *Sao Paulo* where it is 80 persons per square mile. The language of the country is mainly Portuguese. Though it has a long coast-line of more than 4,000 miles, the country is singularly devoid of good harbours. The north coast is low and swampy and in the south it is bordered by a sandstone reef. The country has a large number of rivers, the longest of which is the Amazon, nearly 4,000 miles. The tropical type of climate prevails in three-quarters of the Republic; the remaining portion has temperate climate modified by altitude. The country is so vast in area and its economic possibilities are so great that it is sometimes described as a *sleeping giant*. The lack of communication, inadequacy of capital, paucity of labour and unhealthy climatic conditions in the north are the present obstacles to progress.

Agriculture is the most important industry. The products are coffee, cocoa, rubber, sugar, tobacco and cotton. Brazil

supplies more than 80 per cent. of the world's coffee. Much of the prosperity of the country depends solely on this particular commodity. Coffee-growing is mainly confined to the Sao Paulo region due to various special causes. The soil of the place is rich in iron, a mineral that the coffee plant requires to be well supplied with. The climate is also well suited to Europeans and is sufficiently invigorating to encourage bodily activities. The other coffee regions are Rio-de-Janeiro, Espírito Santo and Minas Gerais. The production of coffee in Brazil for 1946-47 was 20 million bags of 132 lb. each. The highest production was in 1933-34 when Brazil produced 30 million bags. The sales of coffee are controlled by the Government. Since 1940 the surplus coffee has been converted into raw material for plastics.

Brazil ranks second in the production of cocoa which is extensively grown in Bahia. Two-thirds of Brazilian cocoa go to the U. S. A. Sugar and tobacco in which Brazil occupies the third place among the producers are becoming increasingly important. With regard to maize, Brazil is the fourth among the producing countries of the world, being excelled only by the U. S. A., Rumania and Argentina. In recent years the cultivation of cotton has also advanced rapidly. The fibre is short but it is of good quality. Rubber is found in the Acre territory and the states of Amazonas and Para. Its production has been greatly encouraged by the Second World War. In 1943 the production of rubber was 40,000 tons against 800 tons in 1940.

Next to agriculture, the pastoral industry is important. Pigs, sheep, horses and cattle are extensively reared. The country is one of the most important pig-rearing countries of the world.

Though mineral resources are great, they are not worked very much on a commercial scale. The principal minerals are chrome ore, mica, zirconium, graphite, manganese, coal, iron, gold, salt, diamond and beryllium. Brazil is the third largest manganese producer. The local consumption is small, and practically the entire production is exported outside. The chief mines are in the state of Minas Gerais. There has been also a small production of Manganese near Nazareth, Bahia State. Coal is found in *Rio Grande do Sul, Santa Catharina, Parana and Sao*

Paulo. The output of coal in 1942 was about one million tons. Iron deposits exist chiefly in Minas Gerais. The Government has recently opened up a new iron field at *Itabuna* which is believed to be one of the richest iron fields in the world. Gold is widely distributed, but it is chiefly mined in *Minas Gerais*. The country possesses a great potentiality of hydro-electric power.

The manufacturing industries are rapidly developing. Cotton and woollen manufactures, sugar refineries, breweries and fruit-canning are the main industries. The government helps these industries by levying protective duties on the imported goods. The principal manufacturing industries are cotton, silk, rayon and wool, jute, paper, tobacco and sugar. The chief exports are coffee, preserved meat, rubber, cotton, hides, skins, leather, tobacco, cocoa, meat, sugar and timber. The imports are mainly manufactured goods. Brazil is nearer to Africa than any other American region. The distance between Dakar (West Africa) and Brazil is only 1,600 miles. Euro-American air service follows this route. *Rio-de-Janeiro*, the capital of the Republic, is the chief sea port and possesses an excellent harbour. *Santos*, in the south, is noted for the export of coffee. *Bahia* and *Pernambuco* export sugar, cotton and tobacco.

Argentina is second to Brazil in South America in respect of size and population. It has an area of 1 million square miles and the population is nearly 13 millions, mainly composed of immigrants from Southern Europe. It is the most progressive State in South America. The climate is generally cool and the land is flat. The cool climate favours European immigration and the flat land permits the easy construction of a net-work of railways in the east of the country. The rivers are Parana, Paraguay and Uruguay, which are all navigable.

The mineral wealth of Argentina is not great. The country is mainly an agricultural one and may be described as the granary of South America. Agricultural development is the greatest in the east, where nearly all the cereals are grown. The principal crops are wheat, oats, maize and oil seeds. In 1943-44, Argentina raised nearly 8 million metric tons of wheat, 2 million maize and 1.7 million oil seeds. Cotton, potatoes,

sugar, tobacco, rice and yerba mate (Paraguayan tea) are also cultivated. Argentina wheat and oil-seeds have taken a larger market of Indian produce in the U. K. The pastoral industry is of considerable importance. Sheep, cattle, pigs and horses are reared in the south-west. The political power is largely in the hands of the land-owning cattle breeders. Meat refrigeration is the principal industry and the country has the largest refrigerating plant in the world. Other manufactures are flour milling, textile establishments, machinery and vehicle works, chemical works and tobacco factories.

The Republic has about 27,000 miles of railway line. The lack of uniformity of gauge is the main drawback of the railway system. There is a trans-continental railway line connecting Buenos Aires with Valparaiso (Chile)—a distance of about 900 miles. A new railway line is being completed between Salta (Argentina) and Antofagasta (Chile). There are about 32,000 miles of roads in Argentina, facilitating traffic also with Chile, and Uruguay and Paraguay.

COMMODITIES EXPORTED

	(000 metric tons)	
	1947	1948
Grain	1,880 3	3,464 6
Other agricultural products	547 1	572 1
Meat	33 9	259 9
Wool	69 1	115 8
Hides	52 7	82 9
Total ..	3,499 1	5,094 6

The chief exports are cereals, meat, linseed, wool and tobacco. The imports are iron and steel goods, cotton and woollen goods and railway plants.

Buenos Aires, the capital of the Republic, is situated on the river Plata and it is also the chief sea-port. Buenos Aires handles about four-fifths of the imports of the Argentine Republic and three-fifths of its exports. Commercially, socially and economically, the city dominates the whole republic. One serious defect of the port lies in the fact that the river is shallow and requires constant dredging. *Rosario* has an excellent

harbour. It is the most important port for the export of wheat, a good harbour and the port may develop further in future.

Uruguay, the smallest South American State, lies between the Argentine Republic and Brazil.

Uruguay has an area of 72,153 square miles with 2,185,626 inhabitants (1942). The language of the country is Spanish. About 50 per cent. of the population are of European descent—mostly Italian and Spanish.

Geographically, Uruguay is a continuation of the warm temperate grassland region of Argentina. The Atlantic washes its shores for 120 miles, and the Plata and the Uruguay for 600 miles. The country is not mountainous but full of low hills. The climate of the country is on the whole warm temperate—the minimum is 35°F. and the maximum 90°F.

The mineral resources are gold, copper, silver, iron, tin, mercury, mica, slate, gypsum, cobalt and marbles. But little has been done so far to develop mining industry.

The raising of cattle and sheep is the principal industry, mainly carried on in the south and west. Animals and animal-products account for 95 per cent. of the country's exports.

Only 7 per cent. of the area is devoted to agriculture. The principal crops are wheat, maize, oats and linseed. The wine industry is of some importance, having an output of over 15 million gallons.

The exports are almost exclusively wool, meat and hides. Other exports are linseed, wheat, maize, oranges and building stone. Imports are fuel oil, petrol, coal, cotton goods, sugar, iron and steel and machinery. Overseas trade is chiefly with Great Britain, U. S. A., Argentina and Germany.

Montevideo on the Plata, with railways running to most parts of the interior, does the whole external trade of the country. The city has many slaughter-houses. The population of Montevideo in 1941 was 770,000. Other cities are Paysandu, Salto and Mercedes.

Peru, north of Chile, is a backward state because of frequent civil wars. It has an area of 480,000 square miles with 7 million population. The average density of population is 13 per square milé. Nearly half the population are white, and 40 per cent. Indians. The economic resources are varied. In

the high mountain plateaus, gold, silver and copper are found. Petroleum is also being worked there. The agricultural products are sugar, cotton, tobacco, maize and India-rubber. The chief problem of Peru is its "absentee capitalists". Its oil-fields and other minerals are controlled by the U. S. A. and Canada ; its cotton plantations are under the Japanese and Germans ; the railways are in the hands of the British ; the banks are owned by the Italians ; and sugar factories are controlled by the Germans. *Lima* is the capital and trade centre. The population of the city in 1940 was 522,826

QUESTIONS

1. Describe the factors that are checking the development of tropical South America.

2. What are the economic products of South America? Show how they compete with the Indian products in the continent of Europe

3. Give a short description of Brazil and mention its chief exports.

4. Describe the economic resources of Argentina. In which two commodities does the Republic compete with the Indian produce in the U. K.?

5. Discuss the nature of trade between India on the one side and the South American States of Brazil, Argentina and Chile on the other. In what way do you expect this trade to be modified in the near future?
(Cal B Com 1935.)

6. Describe carefully with the aid of a sketch map the distribution of sheep in South America. Under what conditions does this animal thrive best?

7. Name five principal seaports of South America, and point out the parts of the country for which they are trade centres. Mention their chief exports.

8. In what parts of the two Americas can there be surplus production of rice?
(Cal B Com. 1944.)

CHAPTER XIII

AFRICA

Economically, politically and socially Africa is the most backward of the continents. The causes are: (1) The lack of deep indentation and harbours. The coast-line is remarkably



FIG. NO. 66. Map showing political divisions in Africa.

regular and no deep gulfs run into the land. (2) The rim of mountains, which almost everywhere borders the continent, causes rapids and falls in the rivers. (3) Poor soil. (4) Unhealthy climate. Desert conditions prevail in the north-western and south-western sides, while large areas within the tropics are extremely enervating. The interior of tropical Africa, even to-day, remains unexplored because of unhealthy climate. Disease is widely prevalent and has greatly limited the economic growth of the country. These geographical and climatic conditions account for the economic, social and political backwardness of the continent.

The economic development of Africa will depend on the success of solving some problems which at present hinder its progress: (i) The difficulty and cost of transportation prevent much trade with the interior. Some railroads have been built, but progress is slow. (ii) In Africa the demand for the goods of great manufacturing countries of the other continents is slight. The people have a low standard of living and hence they do not need expensive clothes, houses and furniture. The demand in the world market for the products of Africa is not yet great. Palm oil, copra, cocoa, rubber and other main articles, which the great central part of Africa produces, are supplied more easily by the tropical regions of South-Eastern Asia, the East and West Indies and South America. So long as they can supply the world's demand, Africa is likely to be neglected. The development of the equatorial region of Africa will affect, to some extent adversely, the foreign trade of India. Coffee, copra and rubber of Ceylon and Southern India will have to meet the competition of the products of Central Africa in Great Britain. But how far the trade of India can be affected will depend upon the success of solving the transportation problems. (iii) The inadequacy of labour. The white man cannot work in tropical Africa because of diseases and tropical sunlight. The aid of coloured labour is required to develop the regions. The Negroes have few needs and hence little desire to work. The problem of lack of labour in East Africa has been solved by immigration of Indians and other Asiatics. In West Africa natives are employed after great persuasion. The people are ignorant, superstitious and idle. Their way of life is also unhygienic.

In the continent of Africa, only three areas are highly developed. These are (a) The French Colonies of Algeria and Tunis, where the Mediterranean climate permits the white people to live and work efficiently, (b) Egypt, and (c) South Africa. The rest of Africa is very backward, though the economic possibilities are great.

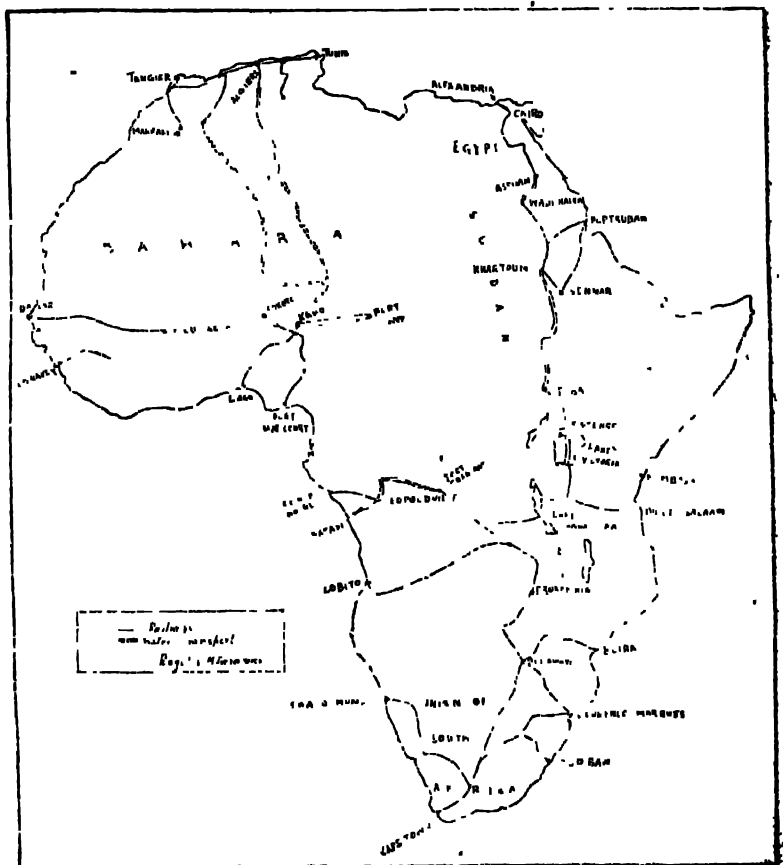


FIG. No 67 The map showing the means of communication in Africa.

Politically Africa may be divided into six divisions: (1) British Africa, (2) French Africa, (3) Belgian Africa, (4) Portuguese Africa, (5) Italian Africa, and (6) African Africa, (*i.e.*, independent States).

British Africa may again be subdivided into (i) British East Africa, (ii) British West Africa, and (iii) British South Africa.

The population of Africa is about 130 millions, of which nearly half are the followers of the Prophet. In Africa, the whites are outnumbered by about 35 to 1.

British West Africa includes Gambia, Sierra Leone, the Gold Coast and Nigeria. The approximate area is 371,393 square miles, and the population in 1946 was 23 millions. The economic development of the Colonies is hindered by the unhealthy climatic conditions, disease, difficulty of penetrating inland and the lack of good harbours along the coast. West Africa, lacking in natural harbours, has always a problem in loading and unloading ships. The coast is flat and sandy, with heavy and continual surf and ships have to stand off in the sea roads while canoes ply to and from through the surf with cargo and passengers. Recently however a harbour has been opened at Takoradi in Gold Coast. The harbour is artificially constructed with mooring accommodation for vessels of different sizes. The West Colonies are not suitable for white settlement. The work is always done by the natives.

Gambia. The climate and soil are ideal for growing groundnuts, and this is the chief occupation of the Protectorate. The country is unsuitable for the European settlers and farming is carried on by the natives. Though the predominant export crop is groundnut, considerable quantities of rice, maize and cotton are also grown. The seat of the Government is at *Bathurst*.

The Gold Coast is rich in agricultural and forest resources. The majority of the inhabitants are farmers. The important products are cocoa, kola, oil-palm product, copra and other food crops. Rubber and cotton are also produced in small quantities. Mahogany is the most important timber export. Gold, manganese and diamonds are produced in the Gold Coast by the Europeans. The road system has been improved recently and there are at present 6,400 miles of motorable roads. The rivers are not navigable. There is a total of 500 miles of railway lines. The principal trade centres are *Kumasi, Accra and Sekondi*.

Sierra Leone. The country, as a whole, is flat and low-lying in the south and west, and broken and elevated in the north and east. Rice is the most important crop and the staple food of the people. Other important food crops are maize, millet, groundnuts and cocoanuts. The principal exports are oil-palm products, kola, ginger, cocoa, coffee and chillies. Some minerals are found in Sierra Leone, viz., iron ore, diamond, gold and platinum. But up till now they are not commercially exploited. There is no large organised industry, but there are several cottage industries, such as the weaving of cloth, manufacture of mats, etc. These productions are mainly for local use. *Freetown*, the principal trade centre, is situated at the northern extremity of the peninsula on a fine natural harbour.

British East Africa. In East Africa, British territory stretches unbroken from the Anglo-Egyptian Sudan to the Union of South Africa. The territory has an area of 224,960 square miles with 4 million population. About 24,000 persons are Europeans. Uganda, Kenya, Tanganyika and Nyasaland lie entirely in the tropics; but the climate is very suitable for white people to settle, as these areas lie chiefly on the high plateau at an elevation of more than 4,000 ft. to 6,000 ft. The temperature is reduced by altitude and the Europeans can settle there permanently. East Africa has consequently developed much, and the bulk of cultivation is in the hands of the Whites. But in these areas also the White people require the aid of the natives. Coffee, tea, maize, sisal and wheat are crops of major importance. Dairy and wool industries are important, and considerable quantities of hides are exported annually.

Uganda. It lies on a high plateau. The temperature is moderate and varies only slightly throughout the year. The resources of the Protectorate are principally agricultural. Agriculture, including the rearing of livestock, is the principal occupation of both the natives and the European settlers. The prosperity of Uganda has been closely bound up with the cotton crop, and the extension of roads and railways and the expansion of towns are responsible for the rapid progress made in this industry during the last twenty years. *With the exception of India, Uganda is the largest cotton-growing country within the*

British Empire. The other crops are tobacco, coffee, tea and rubber. Some tin, gold and salt are mined. The tin mine established at Mwirasandu in South Uganda is of considerable local importance which employs more than 500 persons. The tourist-traffic of Uganda is important. The attraction of Uganda to tourists lies largely in the variety of its interesting scenery and of its animals. Certain areas have been set aside as game reserves. Communications are maintained by railways, waterways, roads and airways. *Entebbe* is the capital. *Kampala* is the commercial centre and *Jinja* is a port on the Lake Victoria.

Kenya is a large tract of territory in East Africa. The northern part of the Colony, comprising three-fifths of the whole, is arid and comparatively waterless. The southern strip, in which almost all economic productions are centred, comprises a low-level coastal area and a plateau raised by volcanic actions to a height varying from 3,000 ft to 10,000 ft. The resources of the Colony are principally agricultural. Coffee, maize, sisal, wheat, tea, sugar-cane and cocoanut are the chief crops. Agricultural production in Kenya is subject to certain handicaps. The principal productive areas are remote from the coast, and transport charges are high by reason of the fact that almost all the goods are to reach their market *via* the Suez Canal. The Colony is self-supporting in all animal products and has built up a certain export trade with the neighbouring countries. Dairy produce is also exported to Europe. *Nairobi* is the administrative capital of the Colony. *Mombasa* is the chief port.

Tanganyika Territory. The Colony belonged to Germany before the First Great War and was known as German East Africa. It is one of the primitive countries of Africa. In area, this territory is larger than Germany, Denmark, Holland, Belgium and Great Britain combined. Agriculture (including stock-rearing) is the most important source of wealth of the country and is the principal occupation of the European settlers and natives. The chief crops are sisal, coffee, tea, tobacco, cocoanut, wheat and barley. Animal husbandry fills a very important place in the native life of Tanganyika and is the principal occupation of the pastoral tribes. Kola, mica, tin, coal, manganese and diamonds are known to exist. Sisal is Tanganyika's most important export. Next to Sisal, diamond

is the most valued export mostly obtained from a single mine and which perhaps is the largest single diamond mine in the world. In 1947 some £1 million worth of stones were produced.

Communications are a weak point. There are two railways: (a) the central line from Lake Tanganyika to Dar-es-salaam, and (b) a shorter line from Moshi to provide an outlet for the coffee and sisal plantations at the port of Tonga. *Dar-es-salaam* is the chief port and capital.

Zanzibar and Pemba. These two islands lie off the coast of Tanganyika Territory. Both the islands are low-lying. Though the climate is hot, it is not unhealthy to the European settlers. The agricultural produce for export purposes consists almost entirely of cloves and cocoanuts. The internal communications of Zanzibar and Pemba are carried on by roads and seas. There are no railways. Zanzibar was formerly the chief port of the east coast but with the rise of Mombasa and Dar-es-salaam it has lost a considerable trade.

Nyasaland is essentially an agricultural country. Agriculture is the principal occupation of both the Europeans and the natives. Tobacco, tea, sisal, cotton, rubber and coffee are the principal products. Some minerals occur in the country, *viz.*, gold, copper, iron, mica, coal and manganese. The climate of the Colony is excellent for the European settlers. The Colony is 130 miles away from the coast. Beira, in Portuguese East Africa, carries the trade of the Colony. Zomba is the seat of the government.

Northern Rhodesia. Northern Rhodesia is a vast British territory and it lies on the water-shed of the Congo and the Zambesi. It consists mostly of the high plateau of Africa, but there are low lands in the valleys of the Zambesi, the Kafue and the Loangwa. The temperature is relatively high even on upland and is, therefore, unfit for European settlement. Its white population consists mainly of temporary residents engaged in trading, mining and plantation works. The country possesses great agricultural and pastoral resources. Cotton, maize, wheat and tobacco are the principal crops. Cattle, sheep, pigs and goats are reared in various parts of the territory. Mineral wealth is only beginning to be exploited. Copper, gold, coal, zinc and tin are worked. Pemba and Lusaka are the two trade centres.

Southern Rhodesia. Southern Rhodesia is more developed than Northern Rhodesia. It is mostly a high plateau and has, on the whole, temperate climate. Mineral wealth is the principal attraction for settlement in the country. Gold comes first in importance and is mined in several places. Chromium is found extensively, and Rhodesia occupies a high place in the production of chromium. Silver, lead, iron, copper, coal and tin are also worked. Southern Rhodesia is admirably suited to arable and pastoral farming. Tobacco, maize, and cotton are the principal crops. But stock-raising is more important than agriculture. On the splendid grasslands, which are found all over the Colony, cattle are reared, and much is being done to improve the quality of the animals by the importation of good quality stock cattle from Great Britain. Bulawayo and Salisbury are the principal towns.

British Somaliland. A small territory on the Red Sea, lies between Eritrea and Italian Somaliland. It is of little economic importance and is more important politically. It occupies a position from which it can command the Red Sea. Some agricultural crops like barley and maize are grown mostly for local consumption. The chief wealth of the land is composed of a few sheep and cattle. Berbera and Zeila are the chief towns.

The Anglo-Egyptian Sudan. It is under the joint control of Great Britain and Egypt.* The climate varies greatly from one region to another, and thus helps to produce different kinds of agricultural products. Cotton is the most important crop, which alone constitutes 76 per cent. of the total exports of the country. Cotton is grown in the Gezira, a fertile tract of land between the Blue and the White Nile. This region has been recently irrigated as the result of a great Government scheme, of which the main feature is a great dam at Sennar on the Blue Nile. Cotton is also grown on the north of Khartum in the Nile Valley. In the south forests are abundant, containing rubber and valuable timber. The middle portion of the Sudan is an extensive grassland where a good deal of cultivation and cattle-rearing are carried on. Rubber, coffee and gum are the other products coming from the middle region. The principal highway of commerce is the Nile. The railway runs from

* The present political situation is extremely fluid.

Haifa to Abu-Hamed and then goes to Khartum ; from Khartum a line runs to Port Sudan on the Red Sea. Khartum and El Obeid are the principal towns.

The Union of South Africa. The Union of South Africa comprises the Cape of Good Hope, Natal, the Orange Free State and the Transvaal. The total area of the Union is 472,494 square miles. The population in 1947 was 11·2 millions of which 2·3 millions were Europeans. South-West Africa which formerly belonged to Germany, is now administered by the Union Government. *The economic development of this British Dominion is the result of the discovery of minerals.* The two most valuable minerals are gold and diamond. South Africa is almost the only source of diamond, and is also a producer of more than half the world's total annual output of gold. "So far the economic structure of the Union has been supported on gold mainly, and the falling off in output that is anticipated suggests an insecurity of basis. New supports to the structure—both industrial and agricultural—are being slowly built, but they may not be sufficiently strong to bear the weight of the edifice in the event of an early exhaustion of the precious metal. That is the critical economic problem confronting the Union today."⁴ The most famous diamond field is at Kimberley in the Cape Province. South Africa is also an important producer of manganese. The most important manganese deposits are in Cape Province. South Africa has great potential wealth in her fisheries, but up till now they have not been fully developed. The economic development of the region has been hindered by the existence of a large native population, and by the fact that much of the manual labour required is provided by the coloured people.

The Cape of Good Hope Province. It is mainly a pastoral country. The economic development is meagre due to labour and race problems, the difficulties of agriculture and the hindrances to communication. Good natural harbours are almost absent. Rivers are of little use for commerce. Fruits are grown on the south-western side where the Mediterranean type of climate prevails. Mineral wealth is considerable, especially diamond. 90 per cent. of the world's diamonds comes

⁴ W. Fitzgerald—*Africa*.

from Kimberley. Wheat, oats, rye, tobacco and millet are the chief agricultural products. Cape Town, a port of call, is the capital. It is also a railway centre and one of the great nodal points in the world's sea-traffic. Of the total population of 17,00,000 only 1,50,000 are Europeans.

Natal. Agriculture is the chief industry of the province. Sugar-cane, tea, tobacco, maize, coffee, cotton, rice and bananas are extensively grown. Coal is the chief mineral product. The quality of the coal is the best in South Africa. *Durban* is the commercial centre and chief sea-port. *Pietermaritzburg* is the capital. The European population is small.

The Transvaal. Mining is the important industry of the province. Gold, coal, iron, diamonds, platinum, lead, silver, tin and copper are the chief minerals. *The Witwatersrand, which lies to the west of Johannesburg, has acquired great importance in recent years on account of the vast quantities of gold which it contains. The rocks consist of a "banket" in which gold lies in particles.* Cheap native labour and the proximity of coal contributed to the rapid growth of this industry in Rand. In 1924, 50 per cent. of the world's gold came from this area. Coal is not of good quality, but still it plays a very important part in the industrial development of the country. The diamond mine lies near Pretoria. The important agricultural crops are sugar-cane, cotton and tobacco. Stock-raising is carried on in the high-Veld where cattle and goats are numerous. Pretoria is the capital. Johannesburg is the largest city in South Africa and is the centre of the gold mining industry.

The Orange Free State. It has a temperate climate and the country is mainly a pastoral one. Cattle and sheep are reared on the high-Veld and also on the grassland in the east of the Province, where the dairy industry has developed. In recent years, agriculture has received great attention. Wheat is cultivated in the south-east in the basin of Caledon river, which has been called, "the granary of South Africa". Maize and millets are also grown. The mineral output is not great. Bloemfontein is the capital and the chief trade centre. It is also an important railway centre.

South-West Africa. Till 1918, it was a possession of Germany. The country is mainly noted for pastoral industry.

Basutoland is a mountainous country. The climate is favourable both to arable and pastoral farming. In the *Bechuanaland Protectorate* the population consists entirely of natives. The chief wealth of the Protectorate consists of cattle, sheep and goats.

Egypt

Egypt occupies a very favourable position for trade. It is situated at the head of one of the most important highways of commerce—the Suez Canal route—through which the trade of Asia with Europe is maintained. Egypt has, therefore, a great scope for developing entrepot trade. *

The climate of Egypt is typically that of desert with the exception of the Northern Delta region, which has the Mediterranean climate. Without the Nile, Egypt would have been as barren as the rest of the Sahara. The Nile irrigates about 12,000 square miles out of a total area of 3,731,000. Practically the entire population of Egypt (14 million) lives in this irrigated part of the country.

The climatic conditions of Egypt are such that, with the aid of irrigation, the land can be cultivated throughout the year. Cotton, sugar-cane, rice, maize and wheat are the principal crops. Cotton is the most important crop on which much of the country's prosperity depends. The country is mainly agricultural and only in a few places there are some manufactures. The mineral wealth of Egypt is found in the deserts. Petroleum and phosphates are known to exist. Egyptian oil output has been steadily increasing from wells along the Red Sea coast. The main production is from one field at Ras Gharib, which yields 1,300,000 tons per year. Large quantities of asphalt are produced. Egypt still imports considerable quantities of oil and particularly kerosene. Her kerosene consumption for cooking and lighting is 400,000 tons, but she only produces 75,000 tons.

"A new oil field is believed, however, to have been found at Ras Sadr, on the opposite side of the Red Sea. Only one well has been filled here and is producing 40 tons a day of good quality oil, free from sulphur. Much importance is attached to this discovery, as it is thought to show good indications of finding a really good oil field in Sinai, where the

Standard Oil Company of New Jersey is actively prospecting, but so far without success."

The Nile is of great importance as a waterway. The main river which flows through Egypt is formed by the union of two main branches, the White Nile and the Blue Nile. Rising in the Lake Victoria on the high plateau of East Africa, the White Nile flows northwards along a flat region. The White Nile has a flow of water throughout the year. The Blue Nile rises in the Abyssinian mountains. In summer, the Blue Nile is in floods. The two rivers join at Khartum and flow through Egypt to the Mediterranean Sea. It is navigable without impediment as far as the Aswan dam.

The railways are worked by the State. The principal line runs from Alexandria to Aswan. From Cairo an important line runs southward and joins the Sudan railway. The Suez Canal lies in Egyptian territory. The Canal gives a great strategic importance to Egypt. The chief export of the country is cotton, which alone accounts for over 85 per cent of the total value of the exports. Other exports are cotton seeds, cereals and vegetables.

Cairo is the capital of Egypt. It is the largest city in Africa. *Alexandria* is a port noted for foreign commerce. *Port Said*, on the northern end of the Suez Canal, is a great coaling station with large entrepot trade. Egypt virtually came under British control in the eighties of the last century. In 1914 she became a British Protectorate. In 1936 England recognised her as an independent State, but in some important respects Egyptian sovereignty is subject to British control.

Abyssinia

It is a large country in Africa, with a population of about 10,000,000. The country is a volcanic tableland, and the climate is healthy and stimulating. Economic progress is slow in spite of considerable mineral, agricultural and pastoral resources. The country has no sea coast and depends on Jibuti, a port in French Somaliland, for its foreign trade.

The country in future can be a great cotton-producing one. The important agricultural crops are coffee, wheat, cotton,

barley and pepper. In its rugged hills and valleys the existence of considerable mineral wealth has been reported recently but lack of communications has prevented its exploitation. Transport is extremely difficult by rail and river. The vast economic possibilities on the one hand and the present backwardness on the other tempted the Italians to make it a Colony for them.* The country has rich deposits of iron, coal, copper and sulphur which are not yet industrially or commercially exploited because of the lack of technical personnel, capital and transport facilities. *Addis Ababa* is the capital and is situated at an altitude of 8,000 ft. The other trade centres are Adowa and Gondar.

ALGERIA AND TUNIS There are the most important States of Northern Africa. They consist of a coastal range. Agriculture is the main occupation of the people. By means of artesian wells the land is irrigated for raising vine, cereals and tobacco. Stock-raising is also of considerable importance. The principal exports are wine, cereals, olive oil, iron, zinc and lead; the chief imports are textiles, machinery and hardware. *Tripoli* is the capital of Tunis. It is very thinly populated. *Algiers*, the capital of Algeria, is an important coaling-station. Both these States are under France.

QUESTIONS

1. On a sketch map, locate the distribution of Africa's gold-fields.
(B Com 1935)
2. Discuss the present economic condition of South Africa with special reference to its (a) mineral resources, (b) pastoral industry
(Cal B Com 1926, 1933)
3. Mention the economic resources of the British possessions in equatorial Africa. What are the prospects of developing these resources and how will the Indian trade be affected by this development?
(Cal Inter. 1940, Cal B Com. 1928, 1939)
4. "Egypt is the gift of the Nile"—Discuss
(Cal. Inter 1939, 1942, 1949)
5. Carefully examine the geographical position of Egypt in relation to world trade routes.
(Cal Inter 1941, B. Com 1931, 1932)

* Abyssinia was an independent country till the early part of 1936 when it was conquered by Italy. During Second World War British forces re-occupied it and the ex-emperor returned to Addis Ababa.

6. Describe the present development of irrigation in South Africa and examine its possibilities.

7. Account for the commercial and industrial backwardness of tropical Africa.

8. What commercial interests induced Britain to colonise in Africa?
(Cal Inter 1940)

9 State the situation of and describe the Nile Valley and give a geographical explanation of its importance.

(Cal Inter 1939, I. I B 1929)

10. "The gold-mines are the backbone of South Africa." Discuss this statement.

11. Discuss the nature of the economic development of South Africa as the result of the war. To what extent is that country dependent on India for the supply of consumption goods? Are there alternative sources available now for such goods? (Cal B Com 1944)

12 Discuss the present position of economic development of Abyssinia.
(Cal Inter 1939).

CHAPTER XIV

AUSTRALIA

The Continent-Island of Australia, situated entirely within the South Hemisphere, is rather off from the main trade routes of the world.

Generally speaking, the surface of Australia is fairly level, consisting of either plains or plateaux of great extent. In the east, however, a continuous range of highlands runs from north to south for over 2,000 miles. This range is known as the Great Dividing Range. Its distance from the sea varies from 25 miles to 120 miles. The coastal plains are, on the whole, very fertile. In between the Great Dividing Range and the Western tableland are the lowlands.

The coast-line of this vast island-continent is generally regular. The eastern side and, to some extent, the north-western side also are more or less indented.

The east coast receives abundant rainfall. Northern Australia, which enjoys monsoon winds in summer, also gets plentiful supply of rain. The central part and the west coast of Australia never receive rain-bearing winds and so these parts, collectively, are called the "dead heart of Australia".

The Continent occupies about 3,000,000 square miles with a population of 6 millions, "the bulk of which live in a narrow belt running from a little north of Sydney round the coast of Adelaide and in the south-west corner".

The average density of population is 2 per square mile.

AREA AND POPULATION IN 1947

	Area— sq mile	Population	Population per 100 sq miles
New South Wales	.. 309,433	2,985,464	965
Victoria	.. .. 87,884	1,040,744	2,339
Queensland	.. .. 670,500	1,106,269	165
South Australia	.. .. 380,070	646,216	170
Western Australia	.. 975,920	502,731	52
Tasmania	.. .. 26,215	257,117	981
Northern Territory	.. 523,620	10,866	2
Australian Capital Territory	939	16,905	1,800
Total ...	2,974,581	7,580,820	255

The density of population is nowhere high, except in Victoria. Therefore, there is opportunity for the population to be increased many times its present figure. Indeed, the lack of labour is a handicap to the development of industries. Again,

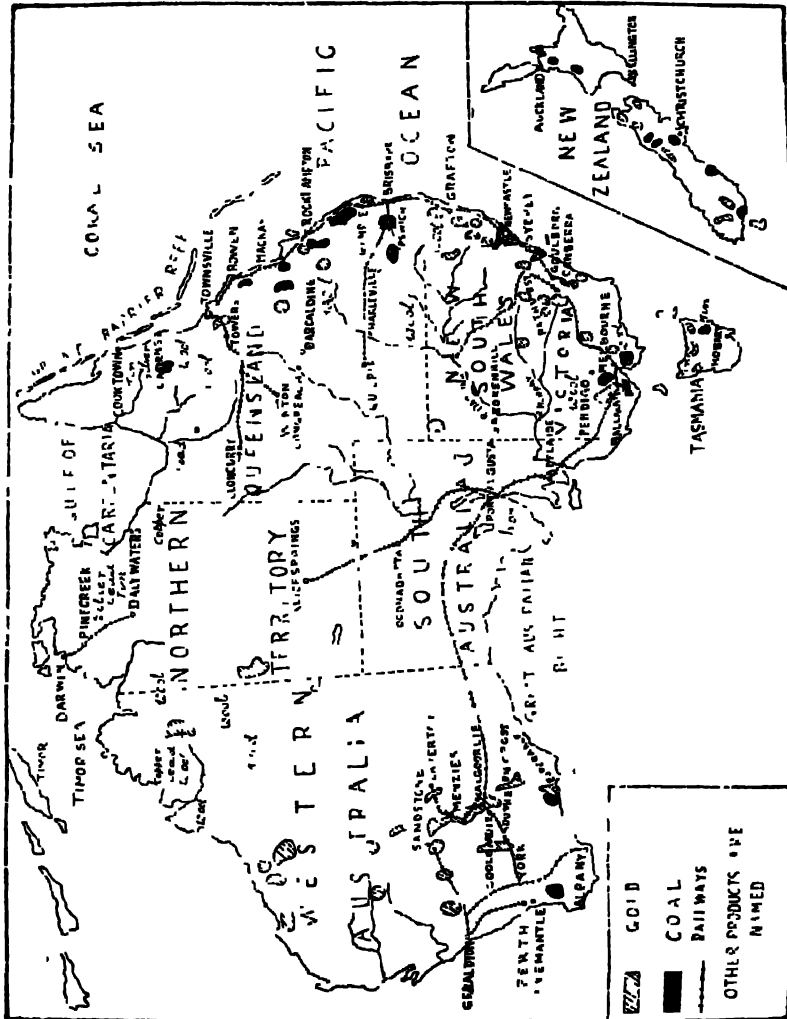


FIG No. 68. Map showing the economic products of Australia.

though the northern part is very fertile and suitable for the cultivation of rice, sugar and cotton, the Europeans cannot carry on work there as the regions are within the tropics and

hence, very hot ; nor will they permit the immigration of the Asiatic labourers there, as they intend to make the Continent a White Man's Land. Australia is closed to land-purchase by the Asiatics. The "White Australia" policy must postpone the development of the Northern portion of the country till the White settlers sufficiently acquire knowledge and capacity to conquer tropical disease. The policy is also creating a feeling of bitterness in some countries in Asia (like Japan) where land is already congested.

Australia is deficient in waterways. The rivers of Australia are short and rapid. The Murray, the most important river, is in the south. The tributaries are the Darling and the Murrumbidgee. Although the length of the Murray is 1,300 miles, it is of little use for navigation. During the rainy season, steamers can ply between Albury on the Murray and Bourke on the Darling. The railway system is being gradually developed. There is one serious defect in the railway system. Different States adopt different gauges on which the lines are built ; these involve many changes. Australia has a railway mileage of about 24,000. There is one trans-continental line running from Perth to Port Augusta, the distance being 1,425 miles. The climate and relief of the country also permit easy development of air-traffic. In 1946 there were 33,719 route miles of air services in Australia.

The economic development of the country has been greatly influenced by its geographical location and conditions. The great distance of the Continent from Europe and America is responsible for the slow settlement. "If it had not been for the discovery of gold, the process of occupation would have been even slower than was the case. But the mineral wealth of Australia, besides attracting a considerable number of people to its shores, gave it a supply of capital which was of great advantage to its development, and on the decline of gold production in the eastern States, the inhabitants began to settle down to agriculture and pastoral farming."

Cultivation does not occupy a large area in Australia. The total area of all crops in 1946-47 was a little more than 21 million acres. More than half the total cultivated area is under wheat, which is a winter crop and is reaped in early summer. The major portion of Australian wheat goes to the United Kingdom,

but some of it is also sent to China and Japan. The chief wheat-growing areas are in the fertile plains of the Murray basin and in the Mediterranean areas. Adelaide is the chief wheat exporting centre. Next to wheat, maize, barley, sugar-cane and oats occupy the largest area. *Sheep-rearing is very important in Australia, where the number of sheep exceeds that of any other country except Russia.* Sheep are reared mostly for wool in New South Wales, Queensland, Victoria, Western and Southern Australia. *But the country raises wool more for export than for turning it into finished product within the country.* The U. K. is the single largest customer of Australian wool, taking as she does more than 30 per cent. France, Japan, Belgium, and Germany are the other buyers. Cattle are reared for beef and dairy produce in Queensland, Northern Territory, coastal lands of New South Wales, Victoria, and the south-west of Western Australia.

The mineral wealth of Australia is considerable. In 1942 about 750,000 persons were employed in the mining industry. In the beginning gold was the chief metal which attracted immigrants to Victoria and New South Wales. Even now gold is an important product of Australia, where more than 4 per cent. of the world's total production is raised. In Victoria the chief gold centres are Ballarat and Bendigo. New South Wales is now-a-days less important for gold. In Queensland, the chief centre is Rockhampton. At present more than half the total production comes from Western Australia, where it is worked in two main centres—Coolgardie and Kalgoorlie.

Coal is the most important mineral product of Australia. It is found in New South Wales, Queensland, Tasmania, S. W. Australia and S. E. Australia. Iron ore occurs in South Australia. Silver is found in many parts of the Continent. The most important silver mines are found in New South Wales, where it is worked in the Broken Hill district. Lead and zinc are also obtained from the silver mines of the Broken Hill. Tin and copper—though abundant—are not worked efficiently at present. The most important copper mines are found in Northern Queensland and South Australia. Of precious minerals, diamond, pearls and sapphires are found.

The manufactures of Australia are in their infancy. *The development of manufactures is hindered by scanty and widely*

scattered population, poor progress of rail and railroads and the overwhelming importance of agriculture and mining. Whatever manufactures she has, are to be found in cities, where labour is available. Flour-milling, weaving and spinning of wool, furniture-making and iron and steel are the important industries.

The most important exports of Australia are wool, wheat, gold, hides and skin, butter, flour, cane sugar, frozen meat, mutton, fruits, wine and cheese.

Wool—U. K., France, Japan, Germany, Belgium, Italy, U. S. A., U. S. S. R.

Wheat—India, U. K., South Africa.

Of the total exports, nearly half goes to U. K.

The chief imports are metal and metal goods, textile fabric and apparel, foods and drinks, drugs and chemicals and paper. Great Britain is the chief supplier. More than 40 per cent. of the total imports comes from the U. K.

The chief cities are Sydney, Melbourne, Adelaide, Brisbane, Perth and Hobart. *Melbourne* is the capital of Victoria and is the chief sea-port and the manufacturing centre of the State. *Sydney*, the capital of New South Wales, stands on the south of Port Jackson. It possesses a fine harbour. Besides being the industrial and political centre, it is also the chief naval station in Australia. *Brisbane* is the capital of Queensland. It is the chief port and industrial centre of the State, from where wool, frozen beef, butter, bacon, hams, pork, hides and fruits are exported. *Adelaide* is the capital of South Australia. Its port is Port Adelaide. The chief exports are wool, wheat, flour, copper, skin, frozen meat, fruits and wine. *Perth* is the industrial, commercial and political centre of Western Australia. Its port is Fremantle. The exports are mainly wool, gold and timber. *Hobart* is the capital and chief railway centre of Tasmania. It has a fine harbour and has trade mainly with Sydney. The exports are wool, gold, tin, silver, timber, fruits, jam and grain.

New Zealand

The Dominion of New Zealand includes North Island, South Island and Stewart Island and several groups of small islands lying at a distance of 150 to 350 miles in the surrounding

seas. The total area is 103,723 square miles and the population 1·8 millions (1947 census). The Maori population is about 100,000. South Island and North Island are the largest and they make up the greater part of the Dominion. *New Zealand is sometimes called "the brighter Britain of the South"*. It is the only part of the British Empire that resembles Great Britain in its life and habits, scenery, temperature and size. The original inhabitants of the Dominion are the Maoris, though at present they constitute only 2 per cent. of the total population. The British emigrants have now permanently settled in New Zealand and they comprise nearly 95 per cent. of the population.

The temperature and rainfall of New Zealand are mainly controlled by the fact that the greater part of the Dominion lies within the influence of the sea. Summers are not very hot, nor the winters cold.

The surface of all the islands is highly mountainous. In the South Island, there is a mountain-range from south to north on the western side. This range is known as the Southern Alps and it is covered by perpetual snow. The most extensive plains in New Zealand are those called the Canterbury plains which occupy the middle of the South Island on the eastern side. On the whole, two-thirds of the surface of New Zealand are suitable for grazing and agriculture.

"The uncrowned king of the country is sheep." In New Zealand the number of sheep per square mile is greater than in any other country of the world. Its mild climate and rich pastures, coupled with the introduction of refrigeration and the utilisation of by-products, have made sheep farming very successful. On all the plains of New Zealand the sheep is extensively reared for wool and mutton. The Canterbury plains with the surrounding downs are the most famous fields for sheep-rearing, where more than one-fifth of the flocks of the Dominion is found. The rearing of cattle for the meat and dairy produce is becoming very important. The dairy industry of New Zealand is run on a co-operative basis and is strictly supervised by the Government "to ensure that no goods are exported which will damage the reputation for good produce which New Zealand holds".

The total area under cultivation in 1947 was a little above

2 million acres. The chief crops are wheat, oats, barley, potatoes and fruits. Of minerals, New Zealand has small quantities of many. Lignite, silver, gold, coal and petroleum are obtained, though with the exception of coal, these are not highly developed.

Manufactures have little developed in New Zealand and these are mainly concerned with the treatment of her primary products. Sparse population and distance from great industrial countries prevent it from becoming a great manufacturing country. Leather-goods-making, woollen and flax manufactures, fruit canning, furniture-making, and raising of dairy produce are some of the important industries. In 1945, about 129,000 persons were employed in manufacturing industries.

Although the rivers of New Zealand are numerous, these are, for the most part, unfit for navigation. New Zealand has over 3,000 miles of railways, which have been greatly influenced in their direction by relief features. The mountainous relief of the country has necessitated the construction of tunnels frequently at great expense. Roads are fast developing in New Zealand.

The pastoral character of New Zealand's development can be at once understood from exports like wool, butter, frozen meat, cheese, hides and skin which account for nearly 90 per cent. of the total value of her exports. The chief imports are motor car, oil, timber, cigarettes, iron and steel plate, manufactured cotton and wire for fencing. The Dominion has the greatest trade relation with Great Britain. The other countries with which the Dominion has trade relations are the U. S. A., France and Germany.

The chief trade centres are Wellington, Auckland, Dunedin, Christchurch, Nelsons and Invercargill. *Wellington* is the capital of the Dominion and is situated on *Port Nicholson* in the North Island. It is the most important collecting and distributing centre of the country and handles a large coastal traffic. *Auckland* is the largest town in New Zealand. As it is situated on a narrow Isthmus of the North Island, it has become important for sea traffic. Dairy produce is an important item of export. It is the centre of the gum collecting and gold mining industries. *Dunedin* is the principal town of the South Island. *Invercargill* is another chief town of the same island.

Christchurch is an important town of the Canterbury plains of the South Island.

QUESTIONS

1. Outline the outstanding geographic factors which have determined Australia's economic development.

(Indian Institute of Bankers 1934)

2. Why does not Australia, which is a larger producer of wool, develop extensive woollen manufactures?

(Cal. Inter. 1934)

3. Describe the principal industries of Australia, including agriculture.

(Cal. Inter. 1940)

4. What are the principal exports from Australia and New Zealand? Discuss the possibilities of increased exchange between these countries and India

(Cal. B. Com. 1936.)

5. Discuss the development of east and west coasts of Australia and show how far the influence of climate is responsible for such development.

(Cal. Inter. 1940)

6. "Isolation and a small population have been potent forces in retarding the development of Australia." Discuss this statement.

(Indian Institute of Bankers 1942.)

7. Account for high density of population in the south-eastern parts of Australia.

[In Australia, the average density of population is only two per square mile. The continent is, therefore, "the most scantily peopled civilised area in the world". Nearly 50 per cent of the population lives in the capital towns of Brisbane, Sydney, Melbourne, Adelaide, Perth and Hobart

The distribution of population has been influenced by rainfall, temperature, irrigation facilities, minerals and means of communication. The Desert Region of Australia where the rainfall is less than 10 inches, is practically uninhabited (one person per eight square miles). The Northern Savannah lands have one person per square mile because the areas are hot all the year. Victoria and southern parts of New South Wales are the most densely peopled areas of Australia. The rainfall, in these regions, varies from 20 to 30 inches. The eastern coastal region has many large cities, all of which are ports. The population is, therefore, dense here. The lower part of the Murray Basin has high density of population because of the extension of irrigation works. The denser population in some parts of the West Australia is accounted for by the discovery of gold-mines.]

8. How is the normal surplus production of wool in Australia and New Zealand being consumed today?

(Cal. B Com 1944)

9. Give an account of the distribution of population in Australia.

(Cal. Inter. 1949.)

10. In recent years the commercial progress of both South Africa and Australia has been remarkable. How has this been possible?

(Cal. B. Com. 1949.)

CHAPTER XV

ASIA

Asia is the largest and the most populous of the continents. It occupies nearly one-third of the land surface of the globe. Its population, which is more than half of the world's total, is mostly confined to the south-eastern side in India, Java, China and Japan.

In Asia there are certain great physical disadvantages for the development of commerce (1) Its size and topography. Asia's great size makes the interior very dry, because sea winds do not blow over it. The size also fosters isolation and backwardness inasmuch as transportation by land is more difficult than by water. The relief of Asia is unfavourable to commerce because the north is separated from the south by a series of mountains radiating from the Pamir plateau. From the Pamir, the Himalayas, the Karakoram, the Tien-shan and the Altai mountains extend to the east, and the Hindukush and the Sulaiman mountains to the west. Again, the east is cut off from the west by deserts and mountains. Communication, therefore, between the east and the west as well as between the north and the south, is difficult and in some places impossible. (2) Climatic extremes and contrasts in Asia are the result of its size, shape and relief. The northern side, which covers more than half of the continent, has a climate unsuitable not only for agriculture, but also for human health and efficiency. The deserts of the interior are totally barren. It is only in the south-eastern parts of the continent where climatic Monsoon and Equatorial conditions favour agriculture and other industries.

Races at all stages of development are found within Asia. About three-fifths of the total population of Asia belong to the Mongolian races, and the areas inhabited by them are Siberia, Japan, Korea, Manchukuo, Mongolia, China, Indo-China, Burma and the Himalayan slopes, the East Indies, the Malaya Peninsula, and Formosa. The Caucasian races in Asia are found in Upper and Middle Indo-Gangetic Plains, in Iran, Afghanistan, Syria, Iraq and Arabia. Negroid characteristics

are found in some of the inhabitants of the Malaya Peninsula, the Andaman Isles and South India.

The distribution of population is very uneven in Asia. Population is very dense in the Indo-Gangetic plain of India, coastal China, Japan and Java where we find more than 100 people per square mile. Population is very sparse in the high plateaus of Central Asia and Arabia as well as in the cold regions of North Asiatic Russia.

The vast size of the continent could not keep the foreign trade at a distance. For many centuries before the advent of the Europeans in Asia, India, Persia and Western Asia had a flourishing foreign trade. The Arabs monopolised it and passed on the merchandise to the Italians. It was to capture this trade that the Portuguese, the British, and the French merchants came to India. The opening of the Suez Canal and the political domination of Europe over Asia have changed the nature of that foreign trade. Asia supplies the world market with raw materials and food-stuffs, and provides a vast market for the products of the industrial countries of the West.

Asia is often divided as : (a) Far East, (b) Middle East and (c) Near East.

The Far East comprises generally Indian Union, Pakistan, China, Malaya, Siam, Indo-China, East Indies and Japan. The Middle East includes Afghanistan, Arabia, Iran, Iraq and the Hejaz. The Near East ordinarily covers Palestine, Syria and Asia Minor. The Far East—namely, Indian Union and Pakistan, China and Japan, is highly developed. Rice, cotton, jute, tobacco, sugar-cane, opium, silk, timber, petroleum, tea, coffee, etc., are extensively found. The business activity is the greatest in the Far East. The Middle East offers unique opportunities for further economic development: here petroleum, gold, wheat, coffee, cotton, hides and skin are extensively raised. Lack of communication and political disturbances are the present obstacles.

Japan

The industrial development of Japan has taken place within the last sixty years. Indeed, its development is phenomenal. The favourable geographical situation in relation to China and other Eastern markets has offered her sources of raw

materials and markets for manufactured goods. Its industrial development is the outcome of the government efforts.* The Japanese Government, in the early stages of its growth, started factories, brought foreign experts, opened banking institutions and introduced the methods of the leading industrial nations of the world in the country. Its climatic conditions favour the production of certain raw materials, such as silk. Supply of labour is abundant and cheap. Moreover, the people lead a frugal life. The Japanese people, being animated by a desire to make their country independent and respected, made super-human efforts to make the country industrially great.

There are many striking points of resemblance between Japan and the United Kingdom. Both consist of islands and are situated in the temperate latitudes. Both are, again, great naval and world powers. Like Britain, Japan is close enough to the continent to receive its civilisation and religion—and yet far enough to maintain its own independent characteristics.

Before the World War II the Empire of Japan consisted of five large and about four thousand small islands.

		Area in square miles (000 omitted)	Population (000 omitted)
Japan Proper	..	148·8	69,254
<i>Possessions :</i>			
Formosa	...	13·9	5,213
Karafuto	..	13·3	332
Korea (Chosen)	..	85·5	22,899
<i>Leased territories :</i>			
Kwantung	...	1·3	1,145
South Manchurian Railway zone		1	523
<i>Mandate :</i>			
Pacific Islands	...	0·8	103
Japanese Empire	...	263·4	99,469

* The industrial growth of Japan has been the result of a policy aiming at making the Empire an economic unit as completely self-contained and self-supplying as her physical limitations would permit. "There has now grown up in Japan a generation equipped with the necessary knowledge and skill which is able to profit by the experience—both the achievements and the mistakes—of other industrial countries." The industries no longer require grants and subsidies of the state, and the only form of government help is at present protection by import-tariff. The Japanese Government, however, takes positive steps to direct the course of industry and trade by legislation.

As a result of her defeat in the World War II, Japan's dependencies may not be returned to her. Korea is already an independent political unit.

Japan proper has the shape of a banana fruit and consists of four main islands of Hokkaido, Honshu, Kyushu and Shikoku. It is mountainous and lies in the earthquake zone in the monsoon region. "There is an average of four a day, but the shocks of a very serious kind, only occur once in six or seven years." The climate of Japan is a mixture of continental and maritime elements. Climate is wet in summer and dry in winter. The temperature of both the seasons varies with latitudes and also with the influence of the sea currents. Winters are very cold on account of the North-west monsoon and the Bering current. In summer, Northern Japan has 80°F. temperature, which is warmer than that in any other land in the same latitude on the western coast of Europe. Typhoons appear frequently in September and cause much destruction on the coast.

Japan is remarkable for the length of its coast-line which is approximately 17,000 miles and gives a ratio of one mile of coast to nine square miles of land. Most of the lowlands which are areas of dense population and large scale production, have sea frontage. Consequently the people have a maritime outlook. Unfortunately, however, deep indented coasts where natural harbours are many, have in general hinterlands of rugged terrain, and therefore unsuitable for the development of major ports. The productive plains have coasts of shallow water. Even at the estuaries, sediments are deposited, necessitating constant dredging operations to permit ships to reach the river entrance. The mountains, directly facing the monsoon, keep the west drier than the east in summer; so Eastern Japan has a mild winter except where the cold currents influence the climate. There are few rivers in Japan and none of them is practically good for navigation, for their course is short and they run through mountain slopes. However, they are useful for irrigation and as sources of power.

The mountainous character of the surface greatly limits the productive area. Agriculture is possible only in about one-sixth of the total area of the country and is practised on an intensive method. Small and scattered fields do not permit use of labour-saving machinery. Even then, the yield per acre is

very high because of unusual amounts of hand labour and fertilizer used. Rice occupies the largest area. Japan specialises in the production of rice. In 1937 rice area occupied 53 per cent. of the total cultivated area. This high degree of specialisation in rice crop is due to sub-tropical climate in Southern and Central Japan, abundant summer rainfall and easily irrigated alluvial lowlands. Other crops are wheat, tea, barley, millet and pulses. The degree of self-sufficiency in foodstuffs is much higher in Japan—it being 95 per cent. higher than in many other industrial countries.

Japan rivals Canada and Scandinavia in the matter of forest resources and their exploitation. About 55 per cent. of the area of Japan is forested. The economic value of her forest lies in its being a source of timber, charcoal, wood fuel, wood pulp and various foods such as nuts, fruits and bamboo shoots. Timber accounts for 54 per cent. of the output of forest products, charcoal coming next with 24 per cent. Timber is obtained from coniferous and broad-leaf forests of pine, oak and maple. She is also rich in bamboos, cypress, camphor tree, lacquer tree (used for varnishes), wax tree and mulberry trees.

Japan is very much underdeveloped in animal industries because of environmental and economic handicaps. Although the country has a rough land, the slopes are very steep for the grazing of cattle. Moreover the sub-tropical climate of the country does not permit cultivation of fodder grasses; the grasses of the hill lands are harsh, coarse and innutritious for cattle. The domestic market for milk and milk products is extremely limited because the people have no taste for dairy products. Sheep raising is also handicapped by long, hot, humid summers. People have to depend for wool, milk, butter and cheese and leather on foreign countries.

Fishing is extra-ordinarily important in the economy of the Japanese nation. Japan is the world's greatest fishing nation and the annual catch amounts to 20 to 25 per cent of the world's total. Coastal fishing is the most important in Japan in which more than 90 per cent of fishermen are employed. The products of coastal fisheries are sardines, herring, mackerel, trout, cod, dog salmon, yellow tail, flat fish and shell-fish. The deep sea-fishery is also becoming important. The industry is carried on in Korea, Formosa and at Sakhalin.

In Japan, the population is increasing very rapidly. In 1940 the population was more than 73 millions in Japan proper. Since then there has been an annual increase of not less than 800,000 people. This pressure of a rapidly increasing population is a very serious problem of modern Japan. The Govern-

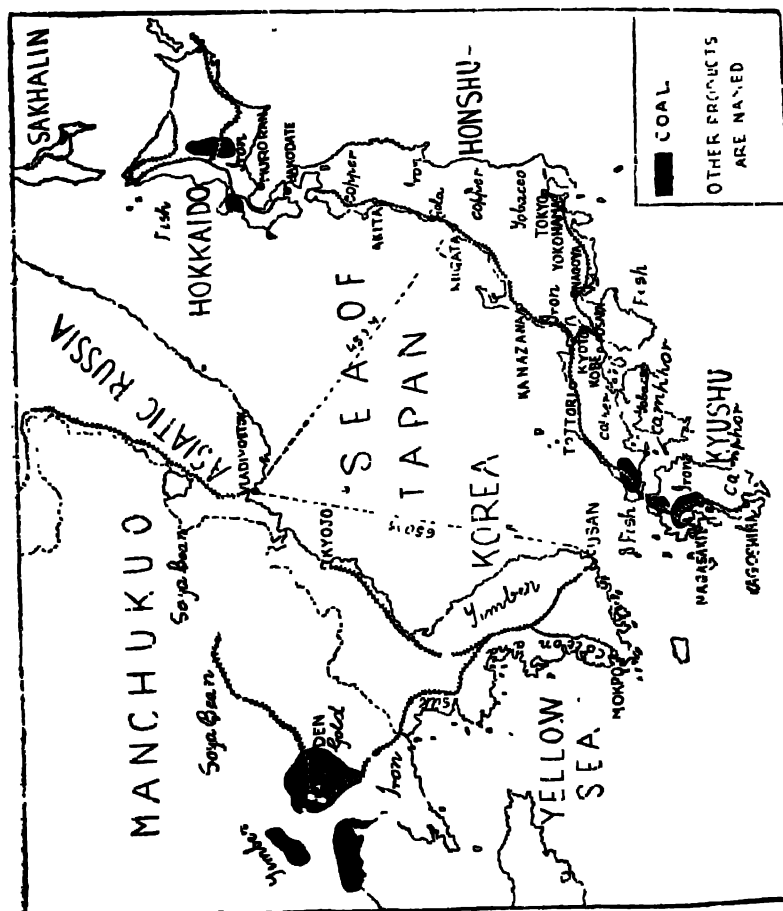


FIG. No. 69. Map of Japan showing her economic products

ment is giving particular attention to the improvement of agriculture, reclamation of waste lands, development of manufactures and expansion of foreign trade with the object of solving the problem. Agriculture alone cannot support the

increasing population which will require new land four to five times greater than what she has. Japan has 2,774 persons per square mile of arable land compared to 2,170 in Britain, 1,709 in Belgium, 806 in Germany, 819 in Italy and 467 in France. At present only 15 per cent. of the total area is arable, and with careful attempt 5 million acres of new land may be reclaimed. People are also encouraged by the Japanese Government to migrate to foreign lands, particularly to Brazil, Peru and Argentina. But it is doubtful whether Japan would be able to solve her problem of population through migration. The real solution lies in turning to commerce and manufactures, and in migrating to sparsely populated parts of the Japanese Empire, *i.e.*, Hokkaido, Karafuto, Korea, Formosa and Manchukuo.

Communications. Owing to the mountainous character of the country, the development of the means of communication in Japan has been slow. At present there are only a little over 10,000 miles of railway. The difficulties of communication by land, and the facilities for it by sea, have naturally encouraged the growth of a strong mercantile marine.

One of the most serious handicaps of Japan's industrialisation is the *poverty of minerals*. The country is poor in most mineral resources except coal, gold, copper and sulphur.

Coal is the most important mineral of Japan. It provides more than 60 per cent. of the value of her mineral output. The coal-fields of Japan are scattered throughout the islands from Sakhalin to Formosa. Northern Kyushu and Hokkaido are the leading producers. Kyushu alone raises more than 60 per cent. of the total output of Japan's coal. The Chikuho field of Kyushu is situated near the sea and in an area of dense population. Hokkaido supplies 17 per cent. of the total output. The poor transportation facilities and the scanty population are responsible for the smaller output of coal.

Next to coal, gold is the most important mineral product in Japan. Mining operations are confined to northern Honshu and southern Kyushu. Gold ore is commonly found in association with copper and silver ores.

The next important mineral is copper. It constitutes 13 per cent. of the total mineral value of Japan. Copper is found

in many places throughout the islands. More than 75 per cent. of the total copper comes from the five mines of Ashio, Besshi, Kosaka, Hitachi and Saganoseki. Japan ranks fourth in copper production, being surpassed by the U.S.A., Chile and Canada.

The fourth important mineral product is petroleum. In 1938 Japan raised 344,000 long tons of oil. Such an output is of no world significance for Japan is outranked in oil production by some 17 countries and her contribution is only 0.12 per cent. of the total oil production of the world. The oil-fields are found in western Honshu. Small oil-fields are also found in Hokkaido, Formosa and Sakhalin. Sulphur is abundant in Japan. This is due to the volcanic nature of the island. This mineral is mainly used in the fertiliser industry. The percentage of Sulphur output against internal demand is normally 156 and so leaves a large surplus for export.

The iron-ore deposit of Japan is not considerable. There are only two important fields—one at Sendi on the east coast of Honshu and the other at Murooran in Hokkaido. Lead, silver, zinc, tin, manganese and antimony are also mined.

Japan is rich in water-power.* The rugged surface of the islands, the swift flowing streams and the heavy rainfall provide ideal conditions for developing hydro-electricity. Most of the larger power sites are located on the eastern and southern slopes of the mountains of central Honshu. The first hydro-electric plant in Japan was started in 1892 in Kyoto on a stream flowing from lake Biwa.

The hydro-electric power in Japan is mainly used for industry, urban transportation and lighting the houses. 91 per cent. of the residential households and industrial buildings are wired for electric purposes. Even in an industrially advanced country like the U. S. A., only 75 per cent. of such buildings are wired.

Several important manufacturing industries have been established in Japan.†

* Of the total electric power production, about 60 per cent. is developed by water-power plants.

† Facts and figures relating to post-war economic Japan are not available.

IMPORTANT MANUFACTURING INDUSTRIES OF MODERN JAPAN (1939-40)

<i>Industry</i>	<i>No. of Industry workers</i>	<i>No. of workers</i>
Silk-reeling ..	.. 410,000	Printing & book binding 70,000
Cotton Spinning ..	.. 205,000	Wool Weaving .. 45,000
Cotton Weaving ..	.. 165,000	Dyeing, Bleaching .. 50,000
Ship-building ..	.. 100,000	Machinery .. 44,000
Brewing ..	.. 90,000	
Silk Weaving ..	.. 88,000	<hr/> Total 1,267,000

Japan has made remarkable progress in the textile industries, which employ more workers than all the other industrial groups combined, and their products form the basis of the Japanese export trade.

Family monopolies are a feature of Japan's industrial economy. Before the War, 15 combines monopolised 70 per cent of the country's industry and finance. Four families controlled one-third of Japan's industry, and 60 per cent of stock on Japanese exchange.

The reeling of raw silk is the most important single industry in Japan. Japan is the leading silk producing and exporting country in the world. But it is really surprising that Japan has not developed the silk-weaving industry. More than 80 per cent. of the silk produced in the country is exported in its raw state.

Japan's industrial progress may be measured by the growth of the *cotton manufacturing industry*. "The industry is favoured by the cheap labour, the proximity of coal, the comparative ease with which raw material can be obtained from India, China, and the U. S. A., and the neighbourhood of the vast Chinese market for the manufactured commodities." Osaka, Kobe, Nagoa and Tokyo are the manufacturing centres.

Osaka is known as the Manchester of Japan. The expansion of Osaka has been very great during the last 20 years. It is the largest city in Japan with a population of 2,259,000. It is situated near the sea coast; small steamers can bring cotton to the mill-area by canals or rivers. It contains more than one-tenth of the spindles of the country. Unlike the silk industry, cotton establishments obtain all their raw materials from foreign

countries, and in normal years raw cotton is the most important single item of import.

Japan is specially weak in iron and steel industries. Because of their vital importance in the industrial system and in many schemes of national defence, the Japanese Government is giving much assistance to those industries. At Yawata in Northern Kyushu, a big iron and steel-work has been established. Ship-building is carried on in Nagasaki and Kobe.

Matches, umbrellas, toys and paper are the important products of other industries. Rubber industry is of growing importance. Recently the Japanese have made much progress in chemicals. The pottery-works of Japan are beautiful and have world-wide demand.

Japan has increased the volume of her foreign trade to a large extent. The prosperity of the country depends on the ability of importing raw materials, exporting manufactured goods, and keeping a favourable balance of trade. From the very beginning of her industrial days, it has been a constant struggle for Japan to balance her imports with her exports, and till 1934 her imports were greater than exports.

In 1938 Japan's foreign trade amounted to £160 millions for exports and £158 millions for imports

THE EXPORTS OF JAPAN			THE IMPORTS OF JAPAN		
		p.c. of total exports			p.c. of total imports
Raw Silk ..	.	23	Raw Cotton ..	..	30
Cotton goods ..	.	21	Wool ..	..	7
Silk goods ..	.	8	Metals and Machinery		15
Clothing ..	.	5	Food ..	..	11
Pottery ..	.	3	Others ..	..	37
Tobacco and tea	.	3			
Machinery ..	.	2			
Metals ..	.	2			
Others ..	.	33			

Till the outbreak of the Second World War the U. S. A. was the most important partner of Japan's trade. The U. S. A. alone provided 25 per cent. of Japan's imports and took 17 per cent. of her exports. About one-third of the total foreign trade

of Japan was with her colonies and dependencies (30 per cent. of imports and 35 per cent. of exports).

DIRECTION OF JAPAN'S FOREIGN TRADE (IN P.C.)

Exports to Asia ..	62	Imports from Asia ..	49
,, U. S. A. ..	17	,, U. S. A. ..	25
,, others ..	21	,, others ..	26

After the World War II, the structure and scale of Japan's industries have fallen considerably. Compared to pre-war level, her present production is as follows :

Textile ..	20 per cent.
Metal ..	25 „ „
Chemical ..	40 „ „

Her exports are barely 10 per cent. of those of the basic period. The economic rehabilitation will be possible when exports will enable her to pay for her imports of raw materials and food. A plan has been formulated by the *Far Eastern Commission* for Japanese industrial recovery within the period of 1952. In the plan, great emphasis has been laid on the development of machine and chemical industries including rayon manufacture. Recently a trade agreement has been reached between Japan and five commonwealth countries (Australia, India, New Zealand, South Africa and U. K.). According to agreement, Japan will supply cotton textiles, industrial machinery, raw silk, rolling stock, chemicals, rayon, wool, silk and paper. In return, the commonwealth countries will send raw wool, iron-ore, salt, raw cotton, cereals, petrol, rubber, tin, jute, oilseeds, coal, manganese and leather.

TRADE CENTRES AND PORTS

The most important trade-centres and cities of Japan are Tokyo, Osaka, Nagoya, Kobe, Yokohama and Kyoto. These cities are grouped very close to one another and none of these is far from the sea.

Osaka is the business centre of Japan. It is often addressed as City of Smoke, for there are many mills and factories in the city, whose smoke keeps the town in a cloak of grey all through the year. It is particularly important for cotton manufactures.

It is located on the Osaka Bay at the eastern end of the Inland Sea, and has connections by water with the rest of Japan and with foreign countries. Moreover, in the city itself facilities for water transport are excellent. It is sometimes called the Venice of Japan. But the hinterland is very poor in raw materials. Cotton spinning, printing and book binding, manufacture of machinery, iron and steel materials, paper goods and ship-building are the activities of the city. "Because of water transport within and without the city; because of its wide expanse of level land; because of the accessibility to raw materials, fuel and labour; and perhaps to a less degree because of a supply of capital originating from the commercial activities of the feudal period, Osaka has surpassed all other cities of Japan in industrial development."

Kobe, only 20 miles from Osaka, is a port and possesses a deep natural harbour. As the city is confined to a narrow coastal strip, there is no room for industrial expansion. A high and continuous row of hills surrounds Kobe and the city is only 2 miles long and 1 mile wide. Its activities are ship-building, match industry and rubber manufacture.

Tokyo, the capital, is situated on the eastern coast of Honshu. It is the third largest city in the world. Its two ports are Yokohama and Tokyo. *Yokohama* is one of the finest harbours of Japan. It is large, deep and well protected. Tokyo harbour is shallow and large vessels cannot enter there. The principal industries of Tokyo are printing and book binding, the manufacture of electrical apparatus, the manufacture of hardware, and the manufacture of glass and rubber. Earthquakes frequently destroy the buildings and industries of the city.

Nagoya is situated on the south shore of Honshu between Osaka and Tokyo. Its harbour is artificial, and it is of no importance as a port of call for the steamship lines connecting with foreign countries. The great Mitsubishi aeroplane manufacturing factory is located in the city. The reeling of raw silk is the most important industry. *China and porcelain* and weaving of cotton cloth are the other activities. *Kyoto* is an old industrial city of Japan. It is the cultural centre of the Japanese empire. *Wakayama* is situated 40 miles south of Osaka. It is an important manufacturing city.

Korea (Chosen)

Korea a former possession of Japan and now an independent political unit, is a mountainous peninsula. The eastern coastal region is narrow and is, therefore, not important for agriculture, which is mainly confined to the lowlands in the western parts. Rice, millet, tobacco, beans, cotton, hemp and other monsoon crops are cultivated. The mineral wealth consists of gold, coal and iron. These minerals are worked by the Japanese. Lumbering industry is becoming important in Korea. *Seoul*, the capital, is connected with Mukden by rail.

Formosa, also known as Taiwan, lies in the western Pacific Ocean, being separated from China by the Strait of Formosa. Its length is about 250 miles with an average width of nearly 80 miles. The total population of the Island is 4 millions. The Island is mountainous and possesses a tropical climate. Forests of the region yield various products, of which camphor is the most important. The climate and soil favour agriculture, and the principal crops are rice, tea and sugar-cane. *Kceling* is the main trade centre and port.

QUESTIONS

1 In the course of thirty years Japan has made great progress in the matter of industrial development. State briefly how it has been possible for her to do so. (I. I. B 1934, Cal Inter. 1935.)

2 What are the principal industries of Japan? Where are they situated? State the sources of supply of the raw materials of those industries. (Cal Inter 1936)

3 Estimate and locate the mineral wealth of Japan. (Cal B. Com 1932.)

4 Give an account of (a) the natural resources, and (b) the climatic conditions of Japan, and show how they have affected her development. (Cal Inter 1933.)

5. Give a short geographical essay on the population problem of Japan. (B A 1942.)

The Chinese Republic

The Chinese Republic covers nearly one-fourth of the surface and contains nearly half the inhabitants of all Asia.

The frontiers of China march with Korea, Siberia, Soviet Turkestan, Afganistan, India, Burma and Indo-China. The total area is about 4.4 million square miles. It is approximately

the size of Europe excluding Russia. It is indeed a continent, containing as it does over twenty provinces which are comparable, alike in size and population, to some of the countries of Europe.

The coastline of China covers a distance of 5,430 miles from the mouth of the Yalu river in Liaoning to Thunging in south-western Kwantung. The northern coast is fringed by shoals, and navigation depends to a great extent on channels cut by rivers.

The Chinese Republic has three divisions: (1) China Proper, (2) Eastern Turkistan, and (3) Tibet. Manchuria and Mongolia, which formerly were under the political control of China, are now separate States.

China is a vast Republic with rich mineral, agricultural and forest resources. Her soil is fertile and rivers are valuable for irrigation purposes. In spite of such vast resources and population *China is a backward country. Her share in the world's trade is scanty.* Certain geographical conditions are responsible for the meagre economic development of the Republic. With the exception of the eastern part, the country is surrounded on all sides by mountains and deserts which render communication with the rest of the world difficult. This isolation is a factor which keeps the people poor, uneducated and ill-informed of what is happening elsewhere. Only less than a century ago the country came in contact with Europe and America. The vast Republic has only one opening to the sea—the eastern coast. The products of the western side cannot be conveniently brought to the eastern side as the distance is too great and the means of transport are insufficient. The need for foreign trade is little felt in the country because of diverse climates and products. When there is deficiency of food in one region, it is supplied by other regions of the Republic. The extension of railways has taken place only in the north; in the south railways are very few. The Government is weak and treats the foreigners with suspicion. Foreign merchants and foreign shipping are restricted to certain ports, known as 'Treaty Ports'.

With her vast resources and population China may become in future one of the greatest industrial countries and potential

markets of the world. The majority of its people are docile, diligent, devoted to work and cheerful.

Agriculture is the main industry of the Republic. The monsoon climate and the fertility of the alluvial soil are the contributing factors. The three basins of the Hwang-ho, Yang-tse-kiang and Si-kiang are very important for cultivation. Millets and wheat are raised in Hopei, Shansi, Shantung and Honan districts which are watered by the Hwang-ho. Rice is cultivated more or less throughout the country. The entire basin of the Yang-tse-kiang from Anhwei to the outer part of Szechwan grows rice. The average yield of rice per acre in China is 1,900 lbs. The reasons why the yield in China is great include the fertility of the soil, the use of manures and the diligence of the cultivator. Cotton is cultivated along the north-eastern coast, particularly in Kiangsu, Shantung and Hopei. Kiangsi and Fukien in the south-east coast are noted for tea. Tobacco is grown in most of the districts and there is a considerable export as well as a big home consumption. Silk, poppies, soya beans and sugar-cane are also found.

The Government is adopting methods to increase production of agricultural commodities particularly food grains, as China is deficient in food grains. In 1946-47, China produced 22 million metric tons of wheat and 48 million metric tons of rice, while her requirements are for over 24 million metric tons of wheat and 51 million metric tons of rice. Recently the Government has introduced a scheme under which it is possible for farmers to obtain financial help from the Government to carry on improvements on their lands.

Horses and mules are used as pack animals in the drier north. Cattle are reared throughout the Republic, while sheep are numerous in the north and the west. Swine is domesticated in Szechwan in the west, Anhwei, Shantung and Hopei in the north-east and Kwantung in the south-east.

The mineral wealth of China is considerable. It is estimated that the country's deposits of coal would exceed that of any other country of the world except those of the U. S. A. Large deposits of coal are found in the following areas: (1) the mountains of Shantung, (2) the province of Shansi, (3) Szechwan, and (4) Yunnan. There are also many other small coal-

fields scattered throughout the country. In the southern side of Shanshi iron ore, tungsten, graphite, copper, etc., are found. Tin, antimony, copper and gold are found in the south. Shantung raises asbestos, gold, gypsum, and iron ore in addition to coal. The most important region for minerals lies between Szechwan and Yunnan where almost every mineral is found.

The development of mining is greatly hampered by the disadvantageous location of the chief mineral areas. As they are mostly situated in the interior, the distance is considerable from the ports, and transport facilities are very poor. Iron ore is not generally found near the coal-fields, a factor which is responsible for the slow development of the metal industry.

The manufactures, which are little developed, are mainly engaged for the supply of domestic necessities and are produced under old methods. Silk, cotton piece-goods, woollen goods, cigarettes, vegetable oil, porcelain and lacquered wares are the products of the manufacturing industries. Recently the iron and steel industry have engaged the attention of the people. At Shanghai a ship-building yard has been opened.

As the major portion of China consists of tablelands and mountainous districts, communications by road, rail and rivers are difficult. *There are about only 10,000 miles of railways in operation.* There are numerous roads over which a vast internal trade is carried on.

The total highway mileage in 1940 was about 79,000 miles. The important highways of commercial significance are the Szechwan-Hunan, Hanchung-Paiho, Szechwan-Yunnan, Lashan-Sichang and Sichang-Hsiangun.

The rivers of China are important both for irrigation and navigation. The chief rivers are the Yang-tse-kiang, the Si-kiang, Hwang-ho and the Pei-ho. The Yang-tse-kiang provides an excellent waterway for more than 1,000 miles from its mouth. The Yang-tse-kiang is the main channel of trade, industry and every form of communication with Central China. It has opened up an enormous tract of territory to foreign commerce. The Hwang-ho or Yellow River in North China is the second largest river of the Republic. Its disastrous floods have cost millions of lives and enormous wealth in China. From its source to the sea it is 2,500 miles long, and yet the river is not navigable. The

course is either too swift and broken by rapids or becomes too shallow and filled with sand bars to allow the use of boats. The Si-kiang in southern China rises in the highlands of Yunnan and flows eastward. The Si-kiang is navigable throughout its course.

These three river basins of China form distinct natural regions as regards relief, soil, climate and products.

River basins	Climate	Relief features	Products
Hwang-Ho (N. China)	Temperate Monsoon, winters dry and cold—summers hot and rainy	(a) Wei-ho valley (b) Loess plain (c) Flood plain	Wheat, millets, barley, soya-beans
Yang-Tse-Kiang (C China)	Sub-Tropical Monsoon Rain at all seasons.	(a) Red basin (b) Ichang gorge (c) Central plain (d) Delta	Rice, tea, cotton, silk, coal, iron.
Si-Kiang (S China)	Tropical Monsoon Hot and wet at all seasons	(a) High Yunnan plateau in west (b) Delta	Rice, cotton, silk.

Estimates of the population of China vary considerably, as no census has ever been taken, but the latest report places it at about 459 millions inclusive of the inhabitants of Tibet, Mongolia as also overseas Chinese.

The distribution of population in China is very unequal. Density of population is very high in (a) the coastal plain from the Manchurian border in the north to the island of Hai-nan in the south ; (b) the plains watered by the Hwang-ho, Yang-tse-kiang and the Si-kiang ; (c) the Wei-ho valley and the Red Basin of Szechwan. The alluvial soil, adequate rainfall and high summer temperature favour the cultivation of lands in all these regions. It must be noted that the very large population in China is based entirely on agriculture. The lower basins of the three great rivers have an average density of population of more than 500 per sq. mile. The areas of low density of population are Tibet, Sin-kiang and Mongolia which are desert-plateaus. The density is nowhere more than 16 people per

square mile. The Yunnan, although a plateau, is crossed by numerous fertile valleys and contains rich minerals. The region is, therefore, densely populated.

China's share in the world trade is scanty. Silk, bean products, cotton, tea and coal comprise the bulk of China's contribution to world trade. The chief role of China is to furnish raw materials. The other exports are tin, sugar, hides, pottery and bamboo wares. The principal imports are cotton goods, hardware, machinery, ship-building materials, arms and ammunition, matches and opium. The development of trade in China has only begun, and the possibilities are great.

The important ports of China as Tientsin, Shanghai, Hangchow, Canton, Nanking, Hankow and Fuchow.

Shanghai is the most important port in China, handling as it does in normal times over 50 per cent. of China's foreign trade. Shanghai is situated on a tidal creek near the Yang-tse-kiang. Its manufacturing industries are cotton and silk. It is the principal port of modern China, and is the natural outlet of the Yang-tse-kiang. The harbour is not very deep and, therefore, big steamers have to anchor at some distance from the shore. *Hankow* is situated on the confluence of the Yang-tse-kiang and the Han rivers. It is an important river port and manufactures cotton, silk and steel. *Tientsin* is the port for Peiping and is the main outlet for the produce of northern China. *Nanking*, the capital of the Republic, manufactures silk and cotton.

Hongkong, a British possession, is an island port near the mouth of the Si-kiang in southern China. It has an excellent harbour. *Victoria* is the town of the island. It is the main outlet for the produce of Southern China. Hongkong is a free port, and carries on a large entrepot trade with Australia, India and the United Kingdom.

Manchukuo

Manchukuo, formerly known as Manchuria, is formally an independent State; but it lies within the sphere of Japan's economic influence. The State lies to the east of the Mongolian Highland and covers an area of about 460,000 square

miles. The country is generally plain and is drained in the north by the Amur. Although agriculture is the mainstay of the people, the cultivated land constitutes only 14 p.c. of the total area, the remaining lands being forests, pastures and wastes. The principal agricultural crops are soya beans, millets, wheat, maize, barley and rice. Soya beans cover one-fourth of the cultivated land and supply 50 p.c. of the world output. Manchukuo is known as the "Soya-bean Empire of the world". Soya bean is the most important product. It is converted into sauce or into a kind of confectionery or is used as a table vegetable. The oil which is extracted from it is used in the manufacture of water-proof, umbrella, varnish, ink and soap.

The State has considerable mineral wealth. Gold, coal and iron are being worked gradually. The agricultural and mining resources have caused a rapid development of manufacturing industries—specially in the southern side. The industries are mostly run by the Japanese.

The want of adequate means of communication is still hindering the progress of the country. Roads are muddy and badly made. The extension of railways will bring about a rapid progress in the State. *Mukden* is the capital of the country. It is connected with Tientsin and Port Arthur. The two principal ports are *Newchwang* and *Darien*.

The three adjacent countries of China, Japan and U. S. S. R. are very much interested in Manchukuo for its varied economic resources and geographical location. The U. S. S. R. always coveted its ice-free ports; China looked on it as a new land for her surplus population. But the "Prize of the Far East" came and remained under the political and economic influence of Japan till 1945.

Japan was vitally interested in Manchukuo. (1) Manchukuo would act as a first line of defence in case a war broke out between Japan and Russia. (2) The vast agricultural, pastoral and mining resources of Manchukuo would provide Japan with raw material for her industries. (3) In Japan population was increasing fast and the country was feeling the pressure already. The surplus population could migrate to Manchukuo, where population was sparse. (4) Manchukuo would be a good market for Japanese goods.

QUESTIONS

1. Show by reference to climate, natural vegetation and mineral resources, why Manchukuo has such important economic possibilities for countries like Russia, Japan and China.

(I. I. B. 1930, Cal Inter. 1934.)

2. Estimate and locate the mineral wealth of China

(Cal. Inter. 1942; Cal B Com 1933.)

3. Give a reasoned account of the economic geography of Manchukuo.

(Indian I Bankers, 1940)

4. Discuss the position of China as a supplier of industrial raw materials. How is the conquest of China likely to help Japan in its bid for commercial supremacy in the world? (Cal B A Hons 1941)

The Philippines, Indo-China and the East Indies

The Malaya Peninsula, Siam and Indo-China enjoy the monsoon type of climate; the East Indies and some parts of Malaya Peninsula have equatorial type of climate.

The Philippines

The total area of the country is 115,000 square miles with population a little above 12 millions. Area of land under cultivation is about 14 p.c. of the total land area. 3.5 million people depend directly on agriculture. The chief crops are rice, sugar, coconuts, abaca and tobacco. Rice is the staple cereal food of the Filipinos. But the country is not self-sufficient in foodstuff. In 1938, the government established the National Rice and Corn Corporation to import rice from neighbouring countries. During the Japanese occupation of the Islands, the production of corn, cassava and sweet potatoes was encouraged to lessen dependence upon imported foodstuffs.

Sugar is raised for export. In normal time, sugar accounts for well over a third of the total value of all Philippines export. The annual production of sugar is about 1 million tons while the home consumption does not exceed 115,000 tons, leaving a considerable surplus for export.

The country is normally the world's leading exporter of coconut products and supports 4 million people.

Abaca (known as Manila hemp) is produced to the extent of about 200,000 metric tons mainly for export to U.S.A. (40%), U.K. (25%) and Japan.

Tobacco has become an important Philippines export. About 600,000 people are dependent on it. 88 p.c. of the tobacco go to U.S.A. in the form of cigars. The Japanese encouraged production of tobacco for cigarettes.

Mineral resources. Of late, mining has become very important. Gold production has made great progress during the last ten years. The principal base metals are iron ore, chrome and manganese ores and copper. The total of base metals in 1940 amounted to about 1,500,000 tons. The country lacks oil and coal.

There is little industrial development in the Philippines. Manufactured goods consist of cigar, cordage, pearl button, embroideries, canned pineapple and hats.

The most important items of export from the country are sugar, hemp, coconut oil, copra, tobacco, embroidery and timber.

The most important items of import into the Philippines are cotton goods, iron and steel goods, vehicles, silk goods, paper, food, cigarettes, petroleum, chemicals and pharmaceutical products, explosives and fertilizers and machines of transport. Cotton goods, iron and steel and food products form the bulk of imports. The direction of trade is mostly with U.S.A. (export 75% and import 62%)

Thailand (Siam)

The area of the country is just under 200,000 square miles, which is rather less than that of Burma. The population amounts to about 15,000,000 souls, consisting for much the greater part of Siamese. The central plain which is drained by the Menam is the most productive part of the country. The upper Siam consists of a series of hill ranges.

83 p.c. of the population are engaged in agriculture. The chief produce is rice. Other products are coconut, tobacco, pepper, cotton, rubber and teak. The minerals are varied—but little developed except tin mining. The country has deposits of wolfram, antimony, coal, copper, gold, iron, manganese, molybdenum, rubies, silver, zinc and zircon.

Siam possesses no industries of importance, but the government has lately set up a paper factory, two sugar factories and a factory for the weaving of cotton cloth.

The principal exports are rice, tin, rubber and teak. India imports rice and teak.

The imports are textiles, metal manufactures and machinery. Among Indian exports to Siam gunny bags are by far the most important followed by cotton yarn and textile manufactures and opium.

Japan was the principal supplier of textile goods to Siam. Now that Japan's monopoly has gone, India can enter into trade agreements for import of rice in return for textile goods.

But the Government must gain control over the industry from the hands of foreigners (British and Australian in the mines, British in teak and Chinese in rice mills).

The Government is endeavouring to supplement the cultivation of rice by encouraging the planting of cotton, tobacco and soya-beans.

Bangkok on the river *Menam* is the capital and only port of Siam. Many canals run through *Bangkok* and, therefore, it is known as "the Venice of the East".

Malaya

Malaya comprises three political divisions and is a British sphere of influence. (i) Straits Settlements (ii) Federated Malaya States (iii) Native States.

The mineral wealth of Malaya lies mainly in tin, of which, before the war, Malaya was the world's greatest individual producer, her output sometimes approaching 40 per cent. of the world's production. The export duty of tin is always a major source of Malayan revenue. Bauxite, wolfram, iron and manganese ore and phosphate of lime, kaolin, coal, gold and arsenical ores are also found in varying quantities. Malaya's agricultural products are primarily rubber, tin and copra. Food production is small and foodstuffs are mainly imported.

The principal items of exports are rubber, tin, copra and tinned pineapples. Tin and rubber constitute 60% of exports. India's share is only 3% of the total exports. India imports canes, gums and resins, dyeing and tanning substances. Malaya imports rice, sugar, milk, tobacco, iron and steel, vehicles, machinery and petroleum. Sixty per cent. of rice and almost all milk required are imported. India supplies coal and coke, cotton goods, grain, hides and skin, jute goods, etc.

Capital controlling rubber and tin is British, the remainder being mostly Chinese. Malaya is not an industrial country. Apart from tin smelting, local industry is small and confined to pineapple canning, brewing, the manufacture of rubber articles, soap, matches, cigars, biscuits and ice.

The future economy of Malaya depends on two factors: first, a continued world demand for her rubber, secondly, success in gradually establishing an economic structure which does not depend heavily upon the production of commodities liable to sharp fluctuation in price.

As regards rubber, the future is uncertain because of the introduction of synthetic rubber in U. S. A., the greatest buyer. "The problem is to induce producers to balance the immediately lucrative occupation of rubber production with other necessary forms of production."

Singapore with a population of 500,000 is one of the most important sea ports in the Far East. It has great entrepot trade. Rubber, tin and copra are collected from Malaya and exported to the U.S.A., U.K. and Japan. It also exports pineapples, spices and iron-ore.

Indo-China

Indo-China has an area of 286,000 square miles and a population of about 23.8 million. Agriculture plays an overwhelming part in the economy of the country. Rice is the most important crop, the yearly production averaging 7 million tons of which 1.5 million tons are available for export. Maize comes next with a surplus for export. Other crops are, oilseed plants, coconuts, pepper, and rubber. About 300,000 tons of fish are caught of which one-tenth is exported.

The country is rich in minerals but the development of mining is slow and meagre. Coal, tin, zinc, wolfram, lead, silver, antimony, chrome, iron, phosphates, tungsten, manganese, bauxite, graphite, copper and rock salt are the principal deposits.

The manufactured articles are alcohol from rice, sugar, cement, cigarettes, soap and matches.

The principal exports are rice, rubber, maize, coal, fish, tin ore, cement, sugar, pepper, beer, cigarettes, chromium,

managanes and sodium chloride. The imports are ginned cotton, cotton tissues, iron and steel, paper and paper manufactures, silk tissues, machines and machinery, motor car and parts, coal, potatoes, etc. India imports rice and exports raw cotton, jute manufactures, and opium.

Hanoi, with a population of 129,000 is the capital. *Saigon* and *Phan-Rang* are the chief ports.

Indonesia

Before the World War II, Indonesia was known as the Netherlands East Indies. In 1945 Java and Sumatra established the Republic of Indonesia. Nearly 60 million people live in the Republic. The East Indies comprise Sumatra, Java, Celebes, Bali, Borneo and extend from east to west for more than 3,000 miles. In future all these islands may unite to form a United States of Indonesia.

Sugar-cane, rubber, copra, tea, tobacco, coffee, Manila hemp and timber are the principal products. Oil-fields in Dutch Borneo, Celebes, Sarawak and Java have recently become very important and these supply nearly 3 per cent. of the world production. Palembang in Sumatra and Tarakan in north-east Borneo are the two important oil centres. The East Indies supply 18 per cent. of the world's tin. Nearly $\frac{2}{3}$ of the output are from the island of Banka and $\frac{1}{3}$ from Belliton.

Java is by far the most developed island in the East Indies and it can boast of a highly organised sugar industry in the East. The important trade centres are Batavia and Surabaya. Batavia is the capital and possesses a magnificent harbour.

I. Area, population and density of the Dutch East Indies

Name of the islands	Area	Population	Density per sq. mile
Java and Madura	... 51,035	41,718,364	818
Sumatra	... 182,867	8,254,843	78
Dutch Borneo	... 208,295	2,168,661	...
Other Islands	... 290,804	18,343,494	6
Dutch East Indies	... 733,001	73,485,362	82.6

II. Composition of the Population

Name of the islands	Europeans	Chinese	Other Asiatics	Indo-nesians
Java and Madura ...	197,571	582,431	52,269	40,891,093
Other islands ...	47,846	650,783	63,266	18,246,974

III. Share of Indonesia in the production and exports of important commodities in the world market. Given as a percentage of Total world trade

Name of the article	1929	1939
Cinchona bark ...	94	90
Kapoc ...	73	65
Pepper ...	69	86
Rubber ...	30	37
Cocoanut products ...	29	27
Sisal ..	22	33
Teas ..	17	19
Cane Sugar ...	11	6
Coffee ...	6	5
Palm oil products .	5	24
Petrol ...	3	8
Tin ..	18	17
Bauxite ...	0	7

IV. Direction of Trade, in 1938, given as percentage of the total trade

Country	Exports	Imports
Europe ...	37	50
America ...	15	13
Asia (without Singapore)	13	25
Singapore ...	17	7
Others ...	18	5

V. Composition of trade. Exports.

Year	Total Exports in million Fl.	Percent- age of Estate Agricul- ture	Percent- age of Peasant Cultiva- tion	Mining
1929 ...	1,443	47.7	27.4	18.3
1933 ...	468	38.7	26.7	27.8
1938 ...	658	39	25.7	30.9

The Near and the Middle East

Turkey, Syria, Iraq, Arabia, Afghanistan, Iran and Palestine are popularly known as the *land of the five seas*. This part of Western Asia is washed by the Caspian Sea, the Black Sea, the Red Sea, the Mediterranean Sea and the Persian Gulf. Economically, Arabia, Iran and Afghanistan are important. Most of the Middle East countries are poor in natural resources. Any large scale industrial development in them will take a long time to come. These countries will remain importers of consumer goods from the West and the East. For limited industrial development, they may also import capital goods for agricultural, hydro-electric and irrigation development.

Syria covers approximately 60,000 square miles of land. It constitutes the home of nearly 3 million people. Agriculture is the chief source of wealth. Fruits, grapes, wheat and cotton are grown in the western part of the country where the climate is Mediterranean. The central and eastern parts provide pasturage of live-stock. *Tripoli*, *Beirut* and *Saida* are the principal ports. *Aleppo* and *Damascus* are historically important.

Iran comprises an area of more than 600,000 square miles with a population of nearly 10 million. The interior is mountainous. In the central and eastern parts of the country desert conditions prevail, but the south-west and some northern parts are fertile, and produce garden crops, wheat, rice, cotton and tobacco with the help of irrigation. Iran possesses every type of climate from the extremes of tropical heat near the shores of the Persian Gulf to extreme cold in the high regions of the Elburz mountains. Climatically the country can be divided into three parts: (a) The Caspian sea region, (b) the Central plateau and (c) the Persian sea region. The winter is very cold in the central plateau. Iran contains petroleum, coal and iron. With the exception of petroleum minerals are not worked. A British company is engaged in working the petroleum field on the south-western part of the country in an area of about 25 square miles.* The oil-fields are connected

* In Iran, the Anglo-Iranian company's fields, north-west of Abadan produced 17,000,000 tons of oil in 1945. Oil is refined at

by a double pipe-line, 145 miles long, running through Dar-I-Khazina and Ahwaz to refineries at Abadan. Iran is the fourth largest petroleum-producing country in the world. Want of

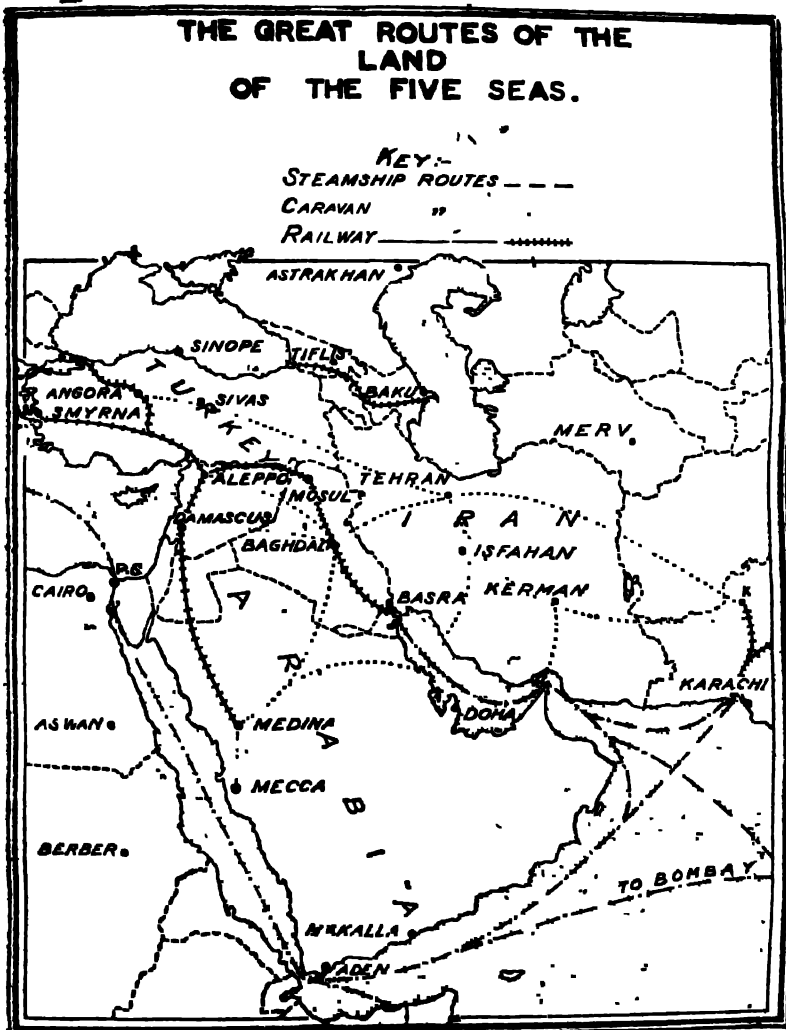


FIG. NO. 71. Communications in the Middle East.

Abadan and exported in tankers.' It often experiences labour troubles with its native staff, owing to rising costs of living in Persia and labour agitations. Farther south, on the Persian Gulf, the oilfield of Bahrein has now reached its peak and is beginning to decline.

adequate means of communication is a great handicap. *The only important rail road is the one which connects the Caspian Sea coast with the Persian Gulf area. The line passes through Teheran and played an important part for the transshipment of goods to U.S.S.R. during World War II.* Almost all the trade is carried on by caravans. Exports are petroleum, carpets, wool, silk, dried fruits and pearls. The important centres are Teheran, Shiraz, Tabriz, Bandar Abbas and Bushire, the last two being sea ports.

Teheran lies almost at the foot of the Elburz mountains. Though situated in the midst of an arid steppe, Teheran has been the political centre of the country since 1788. The city is famous for artistic fabrics like carpets and rugs and also wine, etc. *Shiraz* is situated on an elevation of 4,500 feet above sea level and 120 miles east of the Persian Gulf. It is famous for its excellent wine, rose-water and attar of roses. *Tabriz* lies to the north-west frontier of the country, at an elevation of 5,000 feet above sea level. It is the principal trade centre of the kingdom. The neighbourhood is very fertile, producing large quantities of grapes and fruits. Both *Bandar Abbas* and *Bushire* are noteworthy ports on the Persian Gulf. These two ports do considerable trade with India and the neighbouring State of Pakistan.

Palestine : This region was a mandatory State under British control and has an area of 9,000 square miles with a population of a million and a half. The State of Israel until May 1948, a part of Palestine, has been created as a result of the demand of the Jewish people for a separate State. The coast of Palestine is narrow and fertile, and has the Mediterranean type of climate. The coastal plain is the main centre of the new Jewish colonies. The limestone highlands cover the central region, and in the farther east there is the deep rift valley of the Jordan and the Dead Sea.

The principal occupation of the people is agriculture. Wheat, barley, oranges, grapes, figs, and tobacco are the chief

But, on the coast opposite the island of Bahrein, the new oilfield of Dhahran is coming into production. Their oil is refined at a new refinery at Ras Tanura.

The Kowait oilfield, which lies 30 miles south of Kowait on the Persian Gulf is now in production and pipes have been laid out into the sea from which tankers will be filled.

crops. Oranges are the most important fruit crop and the principal export of Palestine. Both wine grapes and table grapes are raised for the local markets as well as for export to the neighbouring countries.

The mineral resources of the country are as yet undeveloped. The Dead Sea contains unlimited quantities of potash, bromine, magnesium and chlorides. Other minerals known to exist in Palestine are salt, phosphates, gypsum, manganese, copper, sulphur and petroleum.

There is a small fishing industry but the export is negligible. Live-stock consists of cattle, sheep, goats, donkeys, horses and camels. The colony requires more roads and railways. The important trade centres are Jaffa, Haifa, Tel-Aviv and Jerusalem. Haifa is the natural outlet of the country; it is a port as well as a railway centre. Soap boiling is the principal industry, and soap, cereals and fruit form the chief exports.

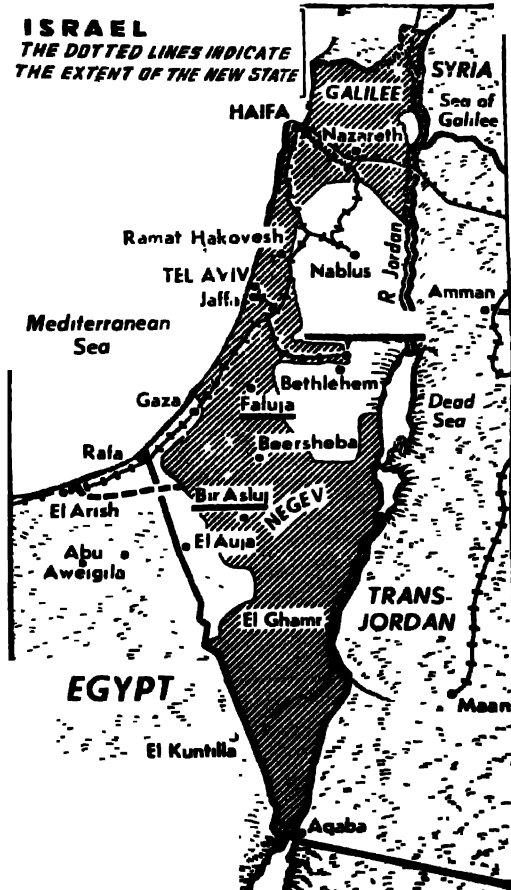


FIG. NO. 72. The division of Palestine gives the Jews a new State comprising about four-fifths of the total area

Iraq :—The modern State of Iraq is a child of the First World War, and owes its progress largely to the efforts and devotion of its British officials. Iraq is situated between the Persian and the Arabian Highland and has an area of about 145,000 square miles. The greater part of the country consists of lowland which is drained by the Tigris and the Euphrates. The frontiers of Northern Iraq include a portion of the Syrian Desert, and consequently the area is uncultivable and almost waterless. Population is little over 4 millions, of which 3 millions are Muslim Arabs.

Cultivated lands form only 8 per cent of the total area, but these support more than 8 per cent. of people. Barley, tobacco, cotton and wheat are the principal crops. Agriculture is practised in the southern alluvial plain with the help of artificial irrigation. This area is drained by the Euphrates and the Tigris, and is threaded and criss-crossed with water-channels. The southern part of the plain is always in danger of flood in the spring time when the snow melts on the mountains of Kurdistan and Anatolia

With improved agricultural methods, extended irrigation, more capital, and better communications, Iraq would be able to support a population many times its present size.

With the exception of petroleum, the minerals of Iraq are not important. The oil-fields are found in the north-east from where a pipe-line has been extended to Haifa and Tripoli on the Mediterranean coast—a distance of about 1,200 miles. Iraq raises a little above 4 million tons of petroleum every year.*

The principal exports are grains pulses and flour, dates and horses. The imports are iron and steel goods, cotton piece goods, sugar, tea, chemicals, silk goods and hides and leather.

* The Iraq Petroleum Company has very extensive concession which covers Iraq, Palestine, the Trans-Jordan, Syria and the Lebanon and is actively progressing. From its Kirkuk oilfield, it obtained in 1945 4,000,000 tons of oil. This oil is pumped through two pipelines to the Mediterranean coast at Tripoli in the Lebanon and Haifa in Palestine. The oil pumped to Tripoli has at Resen to be taken in tankers to Haifa to be refined. There are no refineries at Tripoli yet, though there is talk of building them in future.

The Iraq Petroleum Company intends to duplicate its two pipelines by two more lines, each 16 inches in diameter. This will more than double the output of oil from Iraq, but owing to the difficulty in obtaining steel pipes, it is not expected that the lines will be doubled until 1949.

The trade centres are *Basra, Baghdad, Mosul and Kirkuk.*

Afghanistan:—Until recently Afghanistan was almost an inaccessible country. It is a mountainous country and is generally barren. Agriculture is pursued on the river valleys with the help of irrigation. The important agricultural products are wheat, barley and tobacco. Fruits are grown extensively and form an important item of commerce. Afghanistan contains a varied list of minerals. Both iron ores and coal are found in large quantities in the mountain regions of Central Afghanistan. Pastoral industry is practised for meat and wool. Trade and commerce are hindered by lack of communication, capital and capital goods and extremes of climate. The country has a large frontier trade with Pakistan, Iran and Turkistan. The exports are wool, fruits and silk. The chief imports are cotton piece-goods, metals, leather and arms and ammunitions. *Kabul, Kandahar and Herat* are the principal trade centres.

The Afghans are brave and they can die to protect guests. Within recent years they have made much progress in commercial and industrial activities.

Arabia :—Arabia is divided into a number of autonomous States, although certain areas are under British Protectorate. The greater part of Arabia is accessible to the sea. It comprises an area of 1,200,000 square miles with a population of nearly 6 million. The country is practically a desert, with no lake or navigable river. The relief is mountainous with lowlands near the sea-sides. Horses are famous. Agriculture is carried on in the lowlands near the sea-sides. The famous mocha coffee is grown in Yemen. Pearl fishery is important in the Persian Gulf. Desert climate, inadequate transport facilities and the nomadic character of the people have retarded the general trade development of the country. Coffee, dates, pearls and dried fruits are the principal exports while textiles, arms and ammunitions, sugar and rice are the imports. The principal towns are *Muscat, Mecca, Jeddah and Medina.*

Aden is a British colony in south-west Arabia 100 miles from the entrance to the Red Sea. It has great importance as a naval and air-force station.

Asiatic Turkey or Anatolia has an area of about 290,000 square miles with more than 15 million people. The situation

of the country at the junction of Asia, Europe and Africa has influenced greatly its political, social and economic development. Turkey has natural frontiers on all sides and is bounded on the west by the Aegean Sea, on the south by the Mediterranean and Iraq and on the east by mountains. Before the construction of the Suez Canal, Turkey dominated caravan traffic between Asia and Europe. It is through Turkey, again, that a possible railway route between India and Europe may be built in future.

Adherence to old customs, religious prejudices and lack of coal and iron ore retarded so long its industrial and political development. Thanks to the introduction of Ataturk's *forward policy*, much progress has been made in recent years in various directions.

Geographically, Asiatic Turkey may be divided into three regions: (a) the Mediterranean climate region of the south and west coast, (b) the north coast region, and (c) the Central Plateau where the climate is of extreme type.

Agriculture is the main occupation of the country, supporting as it does more than 75 per cent. of the people. Citrus fruits, olives, grapes and tobacco are cultivated on the Mediterranean coastal region. Wheat, cotton and barley are also cultivated.

There are about 12 million sheep which yield coarse wool for the manufacture of carpets. The hair of goats supplies the materials for the manufacture of mohair.

Turkey has a varied list of minerals like coal, lead, copper, emery, boracite and chromium, but mining is not fully developed. Turkey supplies about one-sixth of the world's chromium. The ore deposits are scattered over Asia Minor, and in the south along the Mediterranean coast. The country is also rich in forest resources. There is also a considerable amount of unharnessed waterpower. Cottage industry, even to-day, remains more important than the factory system. The principal manufactures are rugs, carpets, cigarettes, sugar and cotton goods.

Transport facilities are inadequate in Turkey. The country has only 5,000 miles of railways. In recent years Turkey's foreign trade has increased much. The exports consist of

tobacco, raisins, raw wool and raw cotton, and the imports are iron and steel goods, textiles and sugar.

Large cities are few in Turkey. *Ankara* in Inner Anatolia is the capital of the Republic. *Ismir*, *Adana*, *Konya* and *Bursa* are other important cities.

QUESTIONS

1. Discuss the nature of commercial exchange between India and the Middle East. Do you believe that the latter is a potential market for India's exports, particularly of manufactured goods?

(Cal B Com 1937)

2. Write short notes on the following: Tel-Aviv, Haifa, Aden, Ankara, Basra, Teheran and Kabul. In each case describe its situation and geographical causes that have contributed to its importance.

3. Write an account of Iran under the headings: Position, Boundaries, Drainage, Climate and Products.

4. Describe the route or routes by which civil supplies from outside reach the Middle East. What is the position of India's exports of textile goods in this market?

(Cal B Com. 1943.)

5. The allied countries are apparently producing enough synthetic rubber to meet the deficiency caused by the loss of supply from the Japanese-occupied regions. What, in your opinion, will be the position of this industry when normal times return?

(Cal B Com 1944.)

6. Describe the economic resources of the Middle East. To what extent the world markets are dependent on them?

INDIAN UNION*

Indian Union measures 2,000 miles from north to south and 2,000 miles from east to west and presents the form of a somewhat irregular equilateral triangle.

		Population (in millions)	Area (in 000 of sq miles)
Indian Union			
Provinces	..	... 230	6,27
States	...	... 68	4,18
Kashmir	...	... 4	84
		302	11,29
Hyderabad	...	... 16	100

India occupies a highly favourable situation for the purposes of international commerce. She stands almost at the centre of the Eastern Hemisphere and at the head of the Indian Ocean. She commands all the sea routes for trade between the old and the new worlds—towards Africa and Europe in the west, Australia in the south,—Siam, China, Japan and America in the east. India can rightly boast of possessing “natural frontiers”, shut off, as she is, by the Himalayas on the north, by the Arabian sea on the south-west and by the Indian ocean on the south.

India has a coast-line of 2,500 miles, which gives one mile of coast to every 400 square miles of area. The coast-line of India, in spite of its great length, is broken by only a small number of inlets and possesses a few islands round it. The

* Before the partition in August 1947, India comprised an area of 15,75,107 square miles, of which 10,84,774 square miles, or 60 per cent. were under the British. The remainder consisted of Indian States and foreign possessions divided between France and Portugal. The population of the Indian Empire (British India and Indian States) was nearly 390 millions. The foreign possessions had a total population of 8,70,000 people in an area of 1,274 square miles. By the division of India, three-fourths of the entire population of the country as well as two-thirds of the entire area have come under the Indian Union.

continental shelf of the country is shallow and the shores are usually flat and sandy. Because of these physical characteristics India possesses few ports and harbours in proportion to her coast-line. The Gulf of Cutch, the Gulf of Cambay, the backwaters of Cochin and Malabar, the Palk Strait and the Gulf of Mannar, and the indentations on the mouths of the Ganges are the inlets and straits of India. These are all shallow with the exception of the *backwater* of Cochin and Malabar, and permit navigation when they are made deep by dredging operations.

The east coast of India runs from the mouth of Kalindi in Khulna on the border of Eastern Pakistan along the Sundarbans in a westerly direction, to the Hughli river. From the Hughli, the coast proceeds south-west to the Kistna Delta, from where it continues south to Cape Comorin. *The west coast* runs from Cape Comorin. The coast runs north to the Gulf of Cambay, where the Kathiawar Peninsula juts out west from the mainland. The coast continues north-west from Kathiawar. [The opening (*i.e.*, the gulf) between the north-west coast and the peninsula is known as the Gulf of Cutch].

The Natural Regions

A region of such a vast extent is naturally of diversified configuration—plains, plateaux and mountains. Geographically India presents three natural divisions, each of which is quite unlike the other. These divisions are based on physical conditions.

- I. The Mountainous regions of the North.
- II. The Indo-Gangetic plain
- III. Peninsular India.

I. *The mountainous regions of the north.* The Himalayas run for 2,000 miles from the eastern extremity of Assam to the western limits of Kashmir with a breadth varying from 180 to 220 miles and contain some of the highest peaks in the world. The Himalayas, a series of parallel ranges intersected by valleys and extensive plateaux, rise abruptly from the plains in the east and gradually in the west. The average height of the Himalayas is over 17,000 ft., and about forty peaks are known to exceed 24,000 ft. The best known of these peaks include Nanga Parbat (26,630 ft.), Nanda Devi (25,660 ft.), Dhaulagiri

(26,820 ft.), Mount Everest (29,002 ft.), and Kanchinjunga (28,150 ft.). The snow-line is at a height of about 16,000 feet on the southern slopes of the Himalayas and higher on the northern.

Three distinct parallel ranges are noticeable in the Himalayas: (a) The *Great Himalayas** comprising the highest portion with an average height of 20,000 feet, (b) the *Lesser Himalayas* comprising the ranges with an elevation of less than 15,000 feet, and (c) the *Outer Himalayas* comprising the hills lying between the Lesser Himalayas and the plains. In front of the Outer Himalayas, lies the Terai jungle—the abode of many wild beasts.

The Himalayan chain acts as a natural protective wall for India, and provides rain-water for the plain by arresting the moisture-bearing clouds of the south-west monsoon. And in winter it obstructs the piercing cold winds of Central Asia from coming into India. It gives birth to mighty rivers like the Indus, the Ganges and the Brahmaputra. The Lesser and Outer Himalayas are very rich in animal and forest resources. There are extensive tea plantations in the Outer Himalayas from Assam to the East Punjab. Physical difficulties do not permit cultivation excepting in the Lesser Himalayas where rice, chillies, ginger, tea, wheat and fruits are raised.

The scenery and the mighty peaks of the Great Himalayas attract tourists and climbers from different parts of the world and thus provide a source of income to many hill stations. Because of such influx of people, many hill stations have developed hotel industry in India, although it is not comparable to what exists in such countries as Switzerland and Italy.

II. *The Indo-Gangetic plain.* The plain of Hindusthan occupies the greater part of northern India and covers more than 1,500 miles from east to west with a width of 200 miles. This plain is formed by the basins of the Ganges, the Indus and the Brahmaputra with their tributaries, and has been the cradle of Indo-Aryan civilisation from the earliest times. The geogra-

* The Great Himalayas, again, contain four sections: (a) The Kashmir Himalayas, (b) the Kumaun Himalayas extending from the Sutlej to the Kali, (c) the Nepal Himalayas extending from the Kali to the Teesta river, (d) the Assam Himalayas extending from the Teesta to the eastern-most frontier of India.

physical advantages are (a) fertile soil, (b) favourable climate, (c) flat surface rendering possible the construction of roads and railways, (d) rivers and (e) mineral products, etc. In the *Gangetic plain*, rainfall is heavy and agriculture is the chief occupation of the people. It contains more than 40 per cent. of the total population of India. The *Western plain* beyond the Ganges is more or less dry. Agriculture is practised with the help of irrigation. Although the region contains only 10 per cent. of India's population, it has an extensive and well-developed system of irrigation.

III. *Peninsular India* lies within the tropics. It is bounded on three sides by mountains—on the north by the Vindhya and Satpura ranges including the Malwa and the Aravalli plateaux, on the west by the Western Ghats and on the east by the Eastern Ghats. Two coastal strips of flat land exist on the outer side of both the Western and Eastern Ghats—the western coastal strip is known as the Konkan in the north and Malabar in the south; the Eastern coastal strip is known as the Coromondal Coast.

The Western Ghats run along the Malabar coast of India continuously for a distance of about 1,000 miles down to Cape Comorin. The plain between the Ghats and the sea is 30 to 40 miles wide. The Ghats look like an immense wall facing the ocean. The mean height is about 3,500 feet, the highest point being 8,700 feet (*Dodabetta*). The important passes connecting the Central tableland with the west include the Palghat, the Thal, Borghat and Nama.

The Eastern Ghats are much less elevated and do not form a continuous chain like the Western Ghats. The Eastern Ghats are at a much greater distance from the coast, the intervening lowlands averaging from 50 to 80 miles.

As the general slope of the tableland is from west to east, most of the rivers flow into the Bay of Bengal. The Mahanadi, Kistna, Pennar, Cauvery and Vaigi flow into the Bay of Bengal; the Tapti and Narmada flow into the Arabian Sea. The Peninsular rivers are all rain-fed, and they turn into mere puddles during the dry season. The principal agricultural crops are cotton, tea, coffee, and spices. Cinchona, coconut and forest products are also available.

In the Deccan, there are five natural divisions: (i) The narrow west-coast region from Tapti to Cape Comorin receives the full force of the current of the monsoon from the Arabian Sea and therefore rainfall is over 100". The soil is very fertile and the crops are rice, spices and fruits. The density of population is near about 400 per sq mile. (ii) The Black Soil region consists of deep basaltic soil, which is highly retentive of moisture and therefore does not stand in need of irrigation. It is extremely fertile and owing to the lime it contains, the region is suitable for cotton growing. Millets, oilseeds and wheat are also cultivated. (iii) North-eastern Deccan has poor soil, but the rainfall is over 50". Tank irrigation has much developed. Rice is the principal crop. (iv) Southern Deccan is a *rain-shadow area*, and is frequently visited by famine. The soil is very poor and cultivation is possible only by means of irrigation. Population is scanty. (v) The Eastern coastal plain is a low, alluvial land. The northern portion has summer rain and the southern region has winter rain. The coast-line is broken by the deltas of the rivers and many lagoons. The average rainfall is between 40" to 50". Rice is the principal crop. Millets and indigo are also raised.

Distinction Between Northern and Peninsular Rivers

It is necessary to distinguish between the Himalayan rivers and the Peninsular rivers. The Himalayan rivers have a flow of water throughout the year. Even in summer the rivers receive water from the melting of the Himalayan snow. Flowing through the broad basins they form large tracts of rich alluvial soil on either side. It is no wonder, therefore, that their fertile basins are the natural granaries of the country. The Ganges and the Brahmaputra are navigable and provide excellent waterways for commerce. The irrigation works of the East Punjab, Behar and U. P. depend absolutely on these rivers and their tributaries.

The Peninsular rivers, on the other hand, have water during the monsoons, but shrivel into muddy pools in the dry season. These rivers are of little use for navigation on account of their torrential nature in the upper courses, and the rapids that occur where they descend into deep gorges from the tableland to the

coast plain. With the exception of the Mahanadi, the rivers of Peninsular India are never useful as carriers of commerce.

The Climate of India

India is so vast in size and so varied in topographical features that a uniform climate does not prevail all over the country. For the purpose of climatological studies it is useful to divide India into two parts—Peninsular India and Northern India. Peninsular India has the characteristics of a tropical climate. The temperature is uniformly high and its seasonal variation relatively low.

Northern India lies beyond the Tropic of Cancer. In this region climatic conditions are never similar in all the places. The western side is very hot in summer and very cold in winter. Air is generally devoid of moisture. But in the eastern side winter is mild and summer is hot with plenty of moisture in the air. The western side includes East Punjab and Rajputana. The eastern side embraces West Bengal, Assam, Bihar and the U. P.

These climatic conditions are disturbed by the monsoon winds. The word "Monsoon" comes from the Arabic word "Mausim" (meaning season) and in India monsoon means the rainy season. There are two Monsoon currents—The South-West Monsoon and the North-East Monsoon. The South-West Monsoon, blowing in-shore, carries with it particles of water and gives rain from June to September. The South-West Monsoon contributes nearly 90 per cent of the total rainfall in India, and reaches the country in two currents—the Arabian Sea current and the Bay of Bengal current.

The Bay of Bengal monsoon current, after being obstructed by the Arakan mountains and the Shillong plateau on the east, and the Himalayas on the north, proceeds west-ward up the Gangetic plain and causes copious rainfall in Assam, Bengal, Bihar and the U. P. *The Arabian Sea monsoon*, after surmounting the Ghats and giving rains to the Deccan and C. P., meets the Bay of Bengal current in Bengal and Assam. This combined monsoon is responsible for heavy rainfall in Bengal and Assam.

The South-West monsoon begins to retreat from Northern India in the early part of October, and the retreat becomes complete by mid-December. "This retreat is associated with dry weather in Northern India but with more or less general

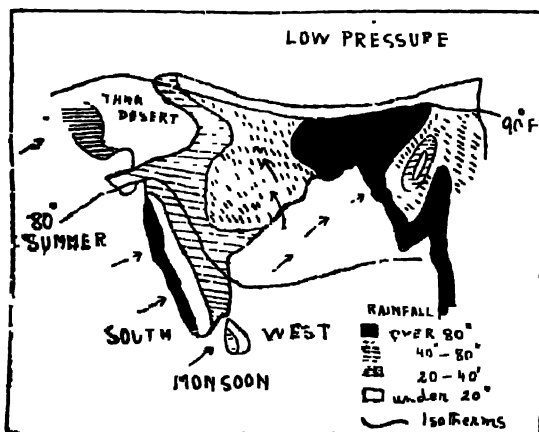


FIG NO 73. The direction of the South-West Monsoon and the distribution of rainfall in summer

rain on the coastal districts of Madras and over the eastern half of the Peninsula."

The North-East wind begins in January and lasts till March. At this period, dry winds from the belt of high pressure in Central Asia (from the West Mediterranean to Central Asia, and North-East China) pass

eastward to Persia and Northern India and cause light rain in Northern India, particularly in the Punjab plains. This rainfall, though scanty, is very important for the *kharif* crops. Another current of cold winds after crossing the Eastern Himalayas moves towards the Madras coast and Ceylon, and gives rain to these areas.

The average annual rainfall in India is 42 inches and the variations from this normal rainfall are surprisingly great. Again, the distribution of rainfall in India depends largely on the physical features. "If the hills and mountains of India were effaced, the country would receive much less rainfall and would not be able to support its present population."*

The economic importance of rainfall in India is of the highest order, inasmuch as rainfall is an imperative necessity for agriculture. The prosperity of most Indian districts depends on the success or failure of the monsoon, and a very

* Normand, *The Weather of India*.

slight variation in the direction of the wet winds may cause a usually well-watered district to become a desert.

Some Indian provinces always obtain abundant rain, and some never get more than an inch or two per annum, whilst over large areas the rainfall is uncertain. It is not the average rainfall of any province, but the deviation from the normal average, together with its timely distribution, that may cause disaster. A deficiency in the expected rainfall causes famine, and too much rain spoils the crop, whilst the early or late arrival of the monsoon may spoil the harvest.

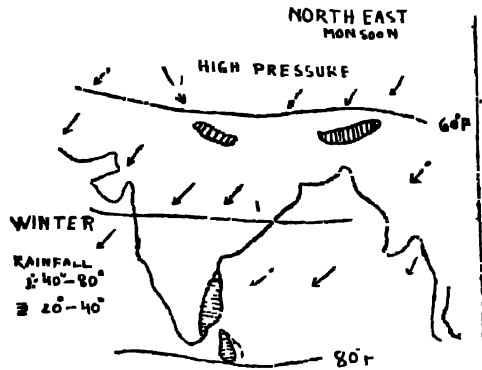


FIG No 74 The direction of the north-East winds and the distribution of rainfall in winter

The most useful classification of areas, according to rainfall, is made into two great zones,—‘*certain*’ and ‘*uncertain*.’ The zones of *certain rainfall* include Bengal, Assam, the West Malabar Coast, the Western slopes of the Ghats and the Upper valley of the Narmada.

The zones of *uncertain rainfall* include the United Provinces, Western and Northern Rajputana, the Central Rajputana plateau bordering on the United Provinces, a large part of the Bombay Presidency, the whole of Madras (except the actual slopes of the Eastern Ghats), South and West Hyderabad and Mysore and some districts of Bihar and Orissa.

The existence of these extensive zones of uncertain rainfall has been the cause of India's famines.

The Control of Famines: We cannot control rainfall in which either deficiency, irregularity or super-abundance may give rise to disastrous famines. We can, however, provide measures to reduce famines. Chief among these are promotion of railways; extension of irrigation; reclamation of waste land; agricultural improvements such as cultivation of proper crops

and introduction of a scientific system of rotation of crops and where necessary, revision of the revenue and rent systems. Therefore, although droughts occur frequently in the interior districts of India, the result is not necessarily famine.

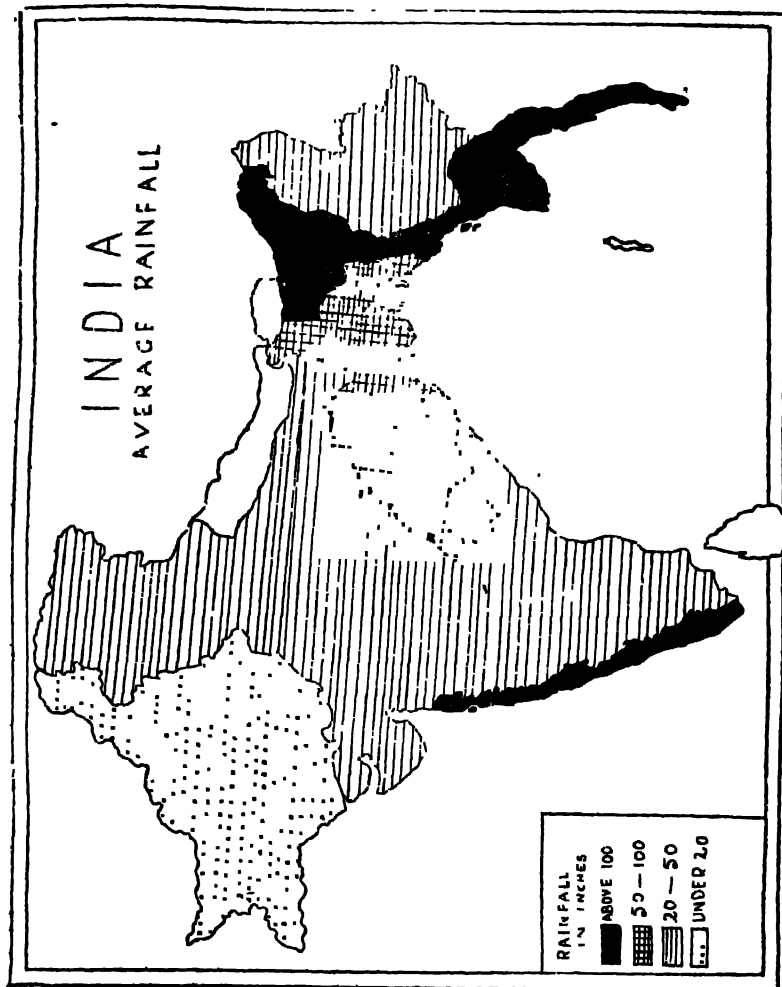


FIG. NO. 75. Map showing the average distribution of rainfall in Undivided India.

Soils

Since there has been no systematic soil survey of India, it is very difficult to give a correct description in regard to the

composition and characteristics of Indian soils. However, the soils of India may be classified under four broad heads :—

- (i) The Alluvial soils.
- (ii) The Black soils.
- (iii) The Red soils.
- (iv) The Laterite soils.

Agriculturally the most important soils are the alluvial which occupy extensive tracts of land, and include the greater part of Gujrat, Rajputana, West Punjab, the United Provinces, Bengal, the Godavari, Kistna and Tanjore districts of Madras and Assam. The eastern and western coastal lands of the Deccan are also alluvial.

The *alluvial soils* are rich in chemical properties and are capable of yielding a large variety of *rabi* and *kharif* crops. The alluvial soils of the Upper Ganges valleys are dry, porous and in some places sandy, yielding crops that do not need the retention of much moisture about their roots. At present in these areas cultivation has much developed with the help of irrigation. The level country and the absence of hills make it easy and comparatively cheap to make canals and distribute the water over the length and breadth of the country. The alluvial tracts of Bengal are more compact, less coarse and more moist than elsewhere, and yield rice, jute, sugar-cane, tobacco, etc., rather plentifully. The alluvial soils of the Deccan coastal strips are non-porous, clayey and of a dark colour.

The *trap soils* comprise the greater part of the Bombay Presidency, the whole of Berar, the western part of the Central Provinces and the western part of Hyderabad. The soils of this region vary in different parts in character and productiveness. The soils are poor, thin and porous on the slopes and the uplands of the Deccan hills where millets and pulses are the main crops. In the lowlands, the soils are deeper and darker-coloured, suitable for wheat, millets and cotton. The most important soil in the Deccan trap area is the *regur* or *black cotton soil*, found mainly in the valleys of the Tapi, the Godavari, the Narmada and the Kistna and parts of Kathiawar, C. P. and the western portion of Central India. "This soil is the product of the decomposition of lavas. It is of a dark colour

and is exceedingly compact and tenacious. It is highly retentive of moisture and rich in chemical properties." Cotton, jowar, wheat, linseed and gram are cultivated in these areas.

Red Soils comprise the whole of Madras, Mysore, and South-east Bombay and extend through the east of Hyderabad and the Central Provinces to Orissa and Chota Nagpur. It is also found to occur in the Santal Parganas and the Birbhum district of West Bengal, the Mirzapur, Jhansi and Hamirpur districts of the U. P., Central India and eastern Rajputana. The consistency, depth and fertility of the soil vary widely in different areas. The poor, sandy and light-coloured soils of the arid uplands yield only bajra, while the rich, deep, bright-red fertile loam of the plains produce a wide range of excellent crops. "Red soils are deficient in nitrogen, phosphoric acid and humus, but potash and lime are generally sufficient."

Although the red soil tracts are drained by the Mahanadi, Godavari, Krishna and Cauvery, the use of water by means of canals for irrigation is absent because of the uneven surface except at the deltas. The construction of wells is difficult because of the rocky nature of the surface. The red soil areas are, however, admirably suited for storage of rain water in tanks. In Madras, Mysore and Hyderabad, cultivation is carried on with the help of tank irrigation.

The Laterite soil is found in Central India, Assam and along the Western and Eastern Ghats. The soils are formed by the weathering of laterite rocks. "The distinguishing peculiarity of these soils is their acidity, and this main agricultural problem is the correction or amelioration of this acidity." Since the tea plant requires acidity, tea plantation is common in these areas.

The laterite soil differs widely from one region to another. Generally speaking, they are poor on the higher levels and cannot retain moisture. In the plains, however, they consist of heavy loams and clays and can easily retain moisture.

THE DISTRIBUTION OF POPULATION

India is one of the most densely populated parts of the world, containing as she does nearly one-fifth of the world's

total population. The population of Indian Union is about 320 millions.

	Population 1941 (000,000)	Density per square mile
PROVINCES		
Assam	10.2	188
West Bengal	21.0	756
Bihar	36.3	521
Orissa	27	271
Bombay	20.8	272
C. P. and Berar	16.8	170
Madras	49.3	391
East Punjab	17.0	190
U. P.	55.0	518
STATES		
Baroda	2.9	345
Gwalior	4.0	154
Hyderabad	16.3	198
Kashmir	4.0	49
Cochin	1.4	953
Travancore	6.1	792
Mysore	7.3	249

The distribution of population is very unequal. West Bengal, Bihar, the U. P., Orissa and Southern Punjab possess more than 350 people per square mile, while Kashmir and Rajputana, contain less than 100 people per square mile. The average density of population per square mile in India is 215. The density is greater in provinces than in the States. With the exception of the Madras States the average density per square mile does not generally exceed 200 in any Indian State.

A noticeable feature in connection with the population in India is the rapid growth of its numbers. The annual increase of population in the country is about 1 per cent. If this rate of growth keeps up, every year there will be an additional 3 million people.

The density of population depends largely on the external environment of a region. Climate, soil, natural resources, topography, etc., largely determine the number of people a given territory can support. In India the density of population generally varies with the amount of rainfall. Population is thick in those places where the rainfall is not only heavy but certain as well. The provinces of West Bengal, Bihar, the U. P.

and Orissa are densely populated, because they possess fertile soil, level land and rainfall sufficient for the development of agriculture. But unhealthy regions like the *Sundarbans* in the Lower Gangetic delta cannot attract people although these regions receive heavy rain. There are areas in India where rainfall, though scanty, supports a large population with the help of irrigation. The western parts of the U. P. have been developed by irrigation.

Mountains cannot attract people for settlement. Land is limited for cultivation, and roads and railways are very difficult to construct; rivers are swift-flowing and are, therefore, useless for navigation. Kashmir and Nepal are mountainous and have a low density of population.

The density of population is also determined by the economic progress of a country. In Europe and North America, the density of population is great in urban and suburban districts and is usually a sign of progress made in mining or industrial or commercial occupations. In India nearly 90 per cent. of the total population is, in the main, village-dwelling. This is because agriculture is the mainstay of the great majority of the people. Eastern Punjab, the Upper Ganges basin, the Lower Ganges basin, the Eastern marginal plain, the Western marginal plain and the South Eastern plain are the most densely populated parts of India. In all these areas agriculture occupies a preponderant position.

Between 1931 and 1941 there has been an increase of 50 million people in India. This rapid growth of numbers has created a difficult situation because production has not been able to keep pace with the increase of population.

The problem of increased and increasing population in industrial countries is solved by a readjustment of population in the different areas of the same country, reclamation of lands, growth of manufactures and also by migration.

Bihar, Orissa, the United Provinces and Madras send out a large number of emigrants to other provinces where they are employed in factories, plantations, mines and agriculture. Assam, Bombay, West Bengal, and the Central Provinces receive the majority of the emigrants.

MOVEMENT OF POPULATION*

(1931)

Provinces which send out emigrants			Gain or loss per 1000 of the population
Bihar and Orissa	...	...	... -37
United Provinces	..	...	... -21
Madras	...	...	.. -20
Provinces which receive emigrants			
Assam	...	..	... +144
Bombay	..	...	... +18
Bengal	...	...	... +26
Central Provinces	...	..	.. +13

A large number of immigrants from Bihar, Orissa, the United Provinces, the Central Provinces and Nepal have settled in West Bengal. These people are mostly employed in the mills and factories of the Hooghly basin and in the tea plantations of the Darjeeling district.

LABOUR IMMIGRATION IN BENGAL

Bihar and Orissa	..	... 60 p.c.
U. P.	...	... 18 „
Nepal	...	... 5 „
C. P.	...	... 3 „
Other Provinces	..	... 14 „

Tea plantations and large tracts of cultivable lands of Assam have attracted many immigrants there and today these people form about one-fourth of the total population of the province. For tea plantations the recruiting grounds are Bihar, Orissa, Central Provinces and Madras. In the pre-partition days, many peasants from Mymensingh and Comilla (now in Pakistan) migrated to Assam and settled in Nowgong district. Although Assam is a big province and contains comparatively a sparse population than many other provinces much of the area is covered by forests and hills. About 39 per cent of the area are forested. Besides, some of the areas are highly

* R. Mukherjee : "Food Planning for 400 millions "

malarious. Till all such areas are properly reclaimed, Assam in its present stage of economic development may not encourage immigration of persons from other provinces.

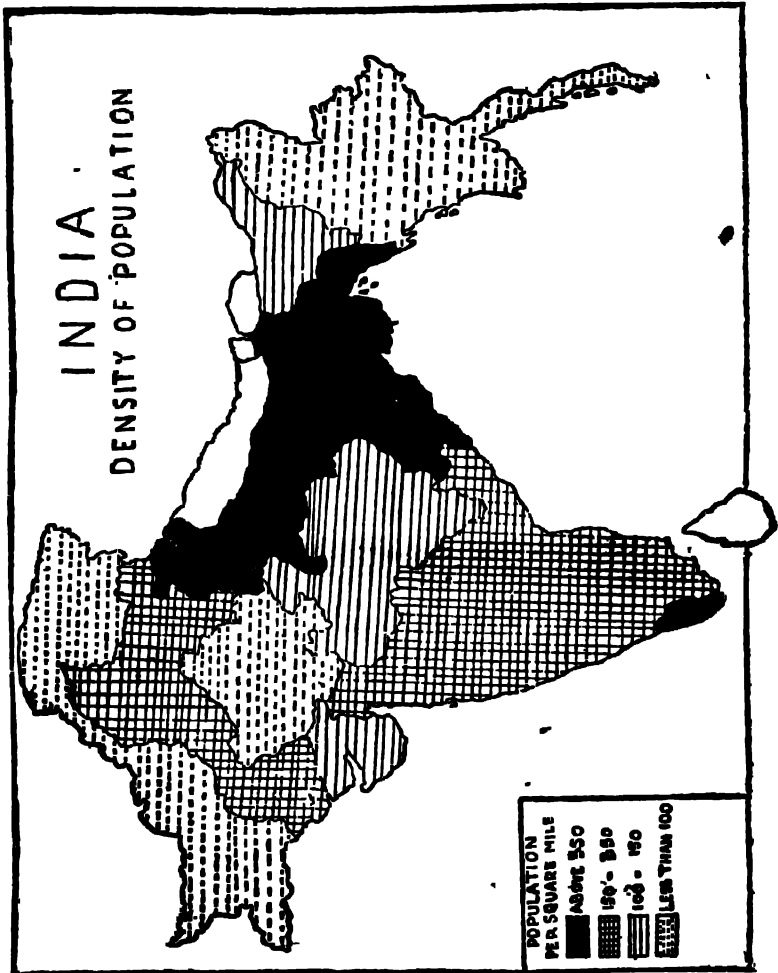


FIG. NO. 76 The density of population in Undivided India Notice the great density of population in the Ganges valley and Travancore

In the great industrial centres of Bombay, Ahmedabad, Solapur and Nagpur labour is recruited from U. P., Madras and Hyderabad.

It is very difficult to say how far the problem of over-population in India can be solved by encouraging emigration of Indians to other countries. Emigration outside India as a measure of population relief is after all a matter dependent entirely on the attitude of the countries that could absorb such surplus. At present above four million Indians live outside India, of whom 186,000 are in the non-Empire countries. Nearly 75 per cent. of the Indian emigrants live in Burma, Ceylon and Malaya. The majority of them are employed as labourers on sugar and rubber plantations and in mining. In periods of agricultural depression generally the number of emigrants necessarily increases. According to the 1931 census the Indian population in Burma was a little above one million or 6.9 per cent. of the total population of Burma. Recently the competition between Indian and Burmese labour in ports and dock-yards as well as on rubber plantations has increased so much that there is already an anti-Indian feeling in that country. The Baxter Commission was appointed to study the whole question of immigration. Since 1941 Indian immigration into Burma has become subject to regulation and restriction.

Ceylon has nearly 28 per cent. of the total Indian emigrants, forming, as it does, about one-seventh of the total population of Ceylon. They are mostly engaged on the tea and rubber plantations. The emigration of Indian labour to Ceylon has declined in recent years because of low wages offered to the Indians. There is also a growing opposition against the settlement of Indians in Ceylon. Malaya contains 15 per cent. of the Indian emigrants whom it engages in mines and plantations. Before the outbreak of Second World War, Malaya protested vigorously against the immigration of Indians. Besides, it appears that both Ceylon and Malaya have reached the saturation point and cannot absorb any more Indian labour.

Nor is the position of Indian labour better in Australia and South Africa. In the early stages of its economic development, South Africa had to invite Indian labour for work on railway construction and in mines. In South Africa, there are 220,000 Indians (the great majority of whom were born in that country) consisting of labourers, traders and professional people. The South African Government now does not want Indian immigrants because of the problem of competition with white men

for land and employment. The white settlers of South Africa find that the Indians are ready for and eager to do their work at far lower rates of pay. The present policy of the South

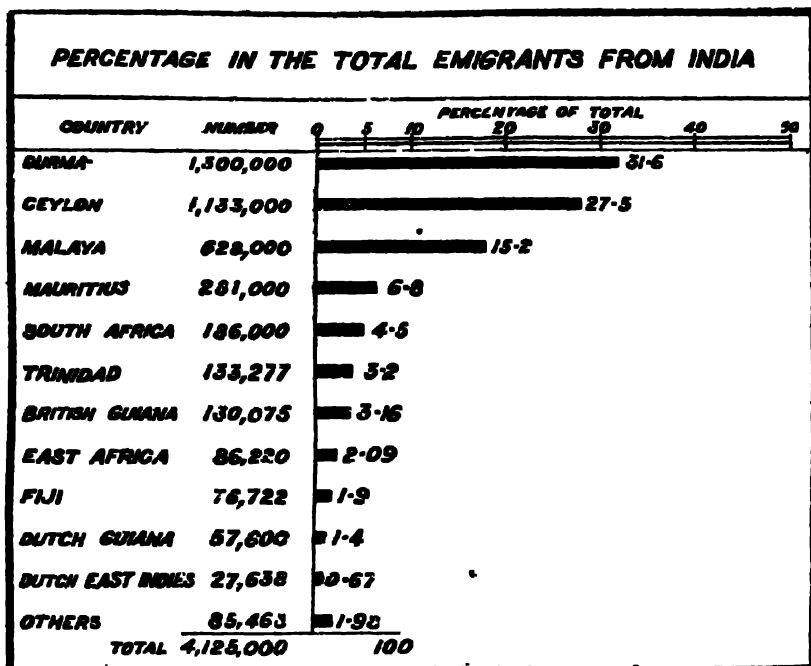


FIG. NO. 77. The table refers to 1938-39 position. About 60 per cent. of the emigrants were in Burma and Ceylon.

African Government is, therefore, to curtail civic rights of the Indian immigrants, "restrict their opportunities of acquiring land outside well-defined areas, and limit their choice of employment for the sake of saving 'white South Africa'."

Australia has an area of 3,000,000 square miles with a population of hardly 7 million, the bulk of which live in a narrow belt running from a little north of Sydney round the coast of Adelaide and in the south-west corner. The density of population is nowhere high. There is opportunity, therefore, for the population to increase many times its present figure. Indeed, the lack of labour is a handicap to the development of Australian industries. The Australian Government has, however, put restrictions on the immigration of Asians on economic ground.

This policy of discrimination in South Africa and Australia acts as a menace to the continuance of feelings of amity and harmony between members of the same Commonwealth. In the Commonwealth and Empire six of every seven persons were non-whites, and therefore, it is desirable that this problem should be faced and solved by honest efforts.

Many of the Indian emigrants are now returning to India. Between 1931 and 1939 about 900,000 emigrants returned to India as against 300,000 who left India during the same period.

It is evident from an examination of these facts that the problem of population in India cannot be solved by emigration to foreign lands. The measures should include reclamation of waste land, agricultural colonization of undeveloped lands and further progress in industrialization. A re-adjustment of population in the provinces may also be possible to remove the present disparity.

Races

India is the only country in the world which contains a great diversity of races at every stage of civilization. It is because various races came from outside from time to time and settled in India.

(i) The *Negroid* or *Negrito* race was the oldest to settle in India from Africa. This has now almost disappeared on the Indian mainland, but traces have been found in the Rajmahal Hills. The Andamanese belong to the Negrito race.

(ii) Next came the *Proto-Australoids* from Palestine. They were long-headed, dark-skinned and snub-nosed. The aborigines of Central India, Central Provinces, and Ceylon belong to this race. These people are the genuine and real ancient Indians. They are named Proto-Australoid, because if we compare them with 'the aborigines' of Australia we find that in the shape of the head and face, the form of hair and skin colour, they are essentially alike.

(iii) The *Austriacs*, a branch of the Mediterranean race, came through Mesopotamia in pre-historic times. They were long-headed, comparatively fair, and straight-nosed. They settled in North India. Later they migrated to Burma, Indo-China, Malaya and Indonesia. They are found today in the

hills and jungles of Central and North-Eastern India, and they form about 1.3 per cent. of the total population of India. The Kols, Santhals, Khasis, Nicobarese belong to this race.

(iv) The Dravidians came to India before 3,500 B.C. from the Aegean Islands and Asia Minor. These people were highly civilised and built many cities in Sind and the Punjab. As they migrated towards the south and the Gangetic plain, they came in touch with the Austriacs, and absorbed a large amount of their blood. "They with the Austriacs supplied some of the fundamental bases of Hindu religion and civilization." At the present day, the Dravidians live mostly in Peninsular India and form 20 per cent. of the Indian people.

(v) Next came the Aryans from the Northern Mesopotamian regions about 2,500 B.C. via Iran. They had white skin, finely-cut noses and were tall. Today they account for 73 per cent. of the population of India and occupy chiefly the East Punjab, Kashmir, Rajputana and Western U. P.

(vi) The *Mongoloid* race came after the Aryans. "They appear to have spread from their primitive home in North-Western China about the middle of the first millennium B.C. into Tibet, and in the subsequent centuries they penetrated through the Himalayas and through Assam into the Himalayan regions and the plains of North and East Bengal and the hills and the plains of Assam." These people occupy Nepal, Tibet, parts of Eastern Kashmir and Assam. They have yellow skin.

(There has been great intermixture, and pure racial characteristics are hardly to be found. The *Aryo-Dravidians* are a mixed race of Aryans and Dravidians. They occupy the United Provinces, Bihar, Central India, Bombay, C. P., and parts of Western Bengal. The *Mongolo-Dravidians* are a mixed race of Mongols and Dravidians. They occupy the eastern parts of Bengal and Assam. They have dark complexion, medium height and broad noses. The *Scytho-Dravidians* are a mixed race of Scythians and Dravidians. They are found in Gujerat and Western Deccan. The Maharattas are of this type).

Languages

India is a land of many languages. According to the Linguistic Survey of India, there are 179 languages of which

116 are current among less than one per cent. of the entire population of the country. When we take into consideration the languages of the large, advanced and organised communities, we find only 14 major languages in India. These languages are: (1) Hindi; (2) Urdu; (3) Bengali; (4) Oriya; (5) Marathi; (6) Gujarati; (7) Kashmiri; (8) Punjabi; (9) Nepali; (10) Assamese; (11) Telugu; (12) ~~Kanada~~ ^{Kannada}; (13) Tamil and (14) Malayalam. Punjabi and Nepali agree very closely with Hindi, while Oriya and Assamese are very much like Bengali. The last four are the languages of the South. The first ten languages are spoken by 230 million people and the last four by 66 millions in the Indian Union.

This multiplicity of languages is no bar to nationhood. Some of the important States like Canada, South Africa, Spain, Czechoslovakia, Switzerland, China, Soviet Russia, the States of South America and Belgium have many languages, some of them have two or three court languages.

Too much emphasis, therefore, need not be given to the problem of languages in India. One can travel throughout Northern India and a good part of the Deccan also with a little knowledge of Hindi.

Both Hindi and Urdu are identical in points of grammar and syntax and can be regarded as really one speech, split into two, by two totally different scripts. Hindi is written in Devnagri script while Urdu in Persian Arabic script. During the Moghal period when the Persian and Turkish-speaking Mohammadans met the Hindus in court, in camp or in the battlefield, the former in order to make themselves understood had to use a mixed dialect, as they had naturalised some words of the language of the Hindus. The Hindus, on the other hand, had adopted some of the expressions of the Mohammadans.

AGRICULTURAL PRODUCTION

India is essentially an agricultural country where nearly 70 per cent. of the total population depend directly and another 20 per cent. indirectly for their sustenance upon land. Thus agriculture is the single largest industry in India and it provides not only all the food grains and raw materials for inland con-

sumption but also for export. As a matter of fact, India occupies a very important place in world trade as a supplier primarily of raw materials. She is, to-day, the largest sugarcane producing country in the world. In the production of rice, millets, tea, groundnut and linseed, her position is equally important. She holds a virtual monopoly in lac, follows the U. S. A. in cotton and Argentina in linseed, ranks with China and Africa as one of the chief millet producing areas, and leads with China in the production of rice and tea.

Agricultural operations in India begin in June with the arrival of the monsoon. The crops thus raised in autumn as a result of the sowings made in June are known as the *Kharif*

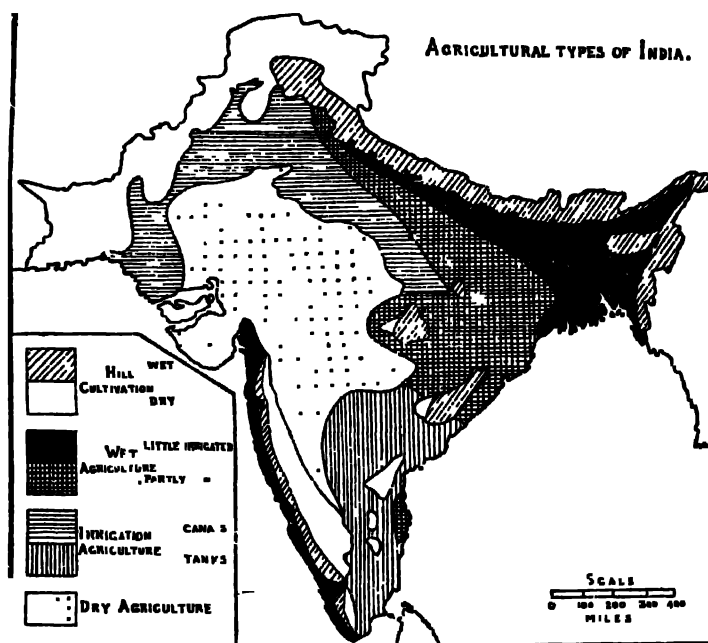


FIG. NO 78 More than 35 per cent. of the total area of Undivided India is actually under cultivation. Wet agriculture is practised in the Ganges Valley and the Western Coastal Strip.

crops. The principal *Kharif* crops are wheat, rice, millets, maize and cotton. Another agricultural season commences in winter, the products of which are known as the *Rabi* crops. The prin-

cipal Rabi crops are wheat, barley, gram, linseed, rape seed and mustard.

There are mainly four types of agriculture in India, *e.g.*, hill cultivation, wet agriculture, irrigation agriculture and dry agriculture. The variations are due to her topography, climate, soil and the type of population.

Cultivation is mostly confined to Madras, Bombay, West Bengal, the U. P., the East Punjab, Bihar, Orissa and the C. P. The areas where the cultivation of land is difficult are (a) Eastern Bombay and the Central Provinces—high lands are generally infertile soil, excepting the black soil; (b) Assam—unhealthy climate in several districts as well as dense forests and mountains restrict cultivation to definite areas; (c) Rajputana, an arid region where cultivation is extremely difficult; (d) the Himalayas where mountains prevent large-scale cultivation; (e) Eastern States where malaria is highly prevalent. All the same, cultivation of land in these five areas is carried on in places which offer better conditions

The study of agricultural crops in India reveals that agriculture is a very old industry and the cultivators are intelligent and hardworking—though illiterate and poor. But there are great differences in the agricultural conditions and practices that prevail in different parts of the country, which are due, in no small measure, to the differences in soil, climate, rainfall and methods of cultivation.

YIELD PER ACRE IN LBS.

	Rice	Wheat	Linseed
Bengal	998	660	416
U P	645	725	359
Bihar	756	865	307
Central Provinces	705	429	180
Bombay	871	393	

Another problem is that the agricultural productivity of India is comparatively lower than the other important agricultural countries of the world.

QUINQUENNIAL AVERAGE (1932-36) IN QUINTALS PER HECTARE

	China	Japan	France	Italy	U S S.R.	U S A.	India
Crop	-----	-----	-----	-----			
Rice ..	25.6	36.0	—	—			13.7
Wheat	11.1	13.8	15.9	14.3	7.8	8.3	7.0
Barley	12.1	20.4	14.6	10.6	8.9	10.5	9.4
Maize	13.7	13.8	14.4	19.6	10.1	13.2	8.7
Cotton	22.4	—	—	—	2.4	2.1	0.9
Linseed	—	—	4.6	5.9	2.8	3.5	2.7
Groundnut	18.2	21.5	—	—		7.9	10.0

This low productivity of land in India is due to the differences in agricultural methods and in the stages of development in the economic life of these countries.

The third problem is the maladjustment of food resources to the growing population of India. The pre-war production of food grains in India, even when supplemented by imports, fell short of the actual requirements of the country. In normal times there has always been a food deficiency for about 12 per cent. of the population in a year.

The outbreak of the war in 1939 brought about great expansion in the cultivation of various crops. The expansion, however, did not take place in the right direction. Our food resources, for example, have not kept pace with the increase of population. Secondly, the agricultural resources were mostly exploited in the interest of the Empire. "The future agricultural expansion in India must in the main be directed to the satisfaction of the needs of the country in the shape of food and other primary products."

AREA UNDER FOOD AND NON-FOOD CROPS
IN THE INDIAN UNION, 1940

				(in million acres)	
				Indian Union	Hyderabad
Food crops ..	..	..	..	185.9	19
Non-food ..	..	..	..	41.9	8.4
Others ..	..	..	..	10.1	0.2
Total crops ..				237.9	27.6
P.C. of area under food crops				80	69

Thus, food crops occupy about 80 per cent of the total acreage under crops in the Union.

INDIA AND HER FOOD SUPPLY

Although India is one of the greatest agricultural countries of the world, her position with regard to food production is not at all satisfactory. The production of cereals in the Indian Union is at present about 40 million tons a year, which is just sufficient for six-sevenths of her population. Moreover, the population of India is growing at the rate of one per cent a year. At this rate India needs additional food of half a million tons of cereals every year. Before the World War II, the deficit could be made up by imports of rice from Burma and Thailand. These countries have now a very small exportable surplus because of political disturbances. Punjab and Sind used to supply a considerable quantity of wheat. Now that the country is partitioned, India is deprived of nearly a million tons of wheat from Sind and Punjab. Thus the shortage of food in India today is to the extent of 5 million tons a year.

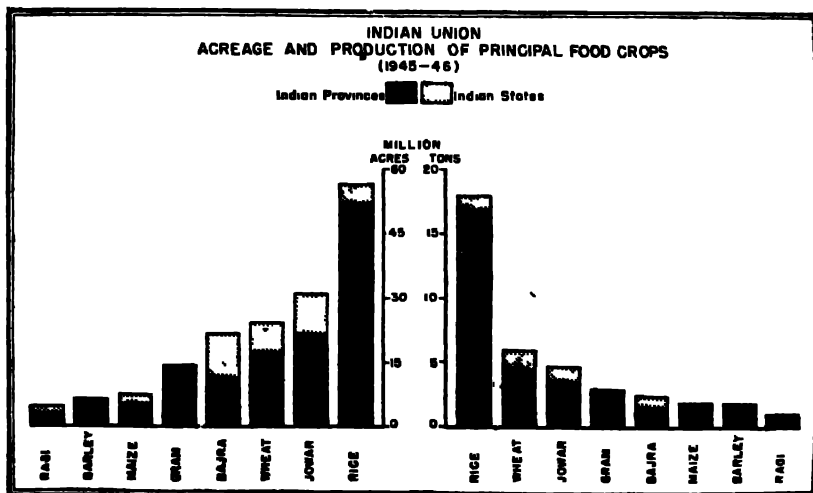


FIG No 79. Note the greater acreage under jowar and bajra in the States. Gram is an exclusive product of the provinces.

So, the deficit of cereal production is about 10 per cent of the present production. This deficit can be made up by reclamation of waste land, increased supply of water through

irrigation, use of good seed, use of chemical manures, use of machinery to bring new or difficult land under cultivation and by anti-malarial measures to improve the health of peasants.

The Government of India proposes to bring 6·2 million acres of potential wheat growing land under cultivation.

Provinces and States.	In million acres.	Provinces and States.	In million acres.
Madhya Bharat	.. 14	Bhopal	.. 5
United Provinces	.. 10	Vindhya Pradesh	.. 5
Central Provinces	.. 9	East Punjab States	.. 4
Bombay	.. 5		—
Orissa	.. 5	Total	.. 62
East Punjab	.. 5		—

Arrangements are being made to obtain machinery for the reclamation of this land from abroad with the aid of a loan from the international bank of reconstruction and development.

The following four-point programme of agricultural development for India has been recommended by Mr. N. C. Dodd, Director General of F. A. O. of U. N.: (a) Control of soil erosion by strict limitation of forest cutting, (b) extension of tube well irrigation, (c) greater use of clover crops for their nitrogen restoring and water holding properties rather than the extensive use of artificial fertilisers, and (d) limiting mechanisation to the breaking of new land and terracing to avoid soil erosion. Total mechanisation of Indian farming would be unwise as that would disturb the long-established agricultural practices.

Rice

The first mention of rice in India occurs in the Atharva Veda as early as 1,000 B.C. It is at present the most important crop in India, covering as it does nearly 30 per cent. of India's sown area.

Rice thrives best in high temperature and abundant moisture and the crop is generally grown in fields susceptible to being flooded at certain stages of its growth. Hence the greatest areas under rice are found in river deltas, in low-lying coastal districts and in tracts subject to floods during the monsoon. Rice can also be grown in hill-tracts if the supply of water is abundant,

and the summer warm. "For the purposes of cultivation, the hill sides are cut into terraces which are levelled off and embanked by means of bunds in order to retain the moisture obtained from nearby streams or from rainfall."

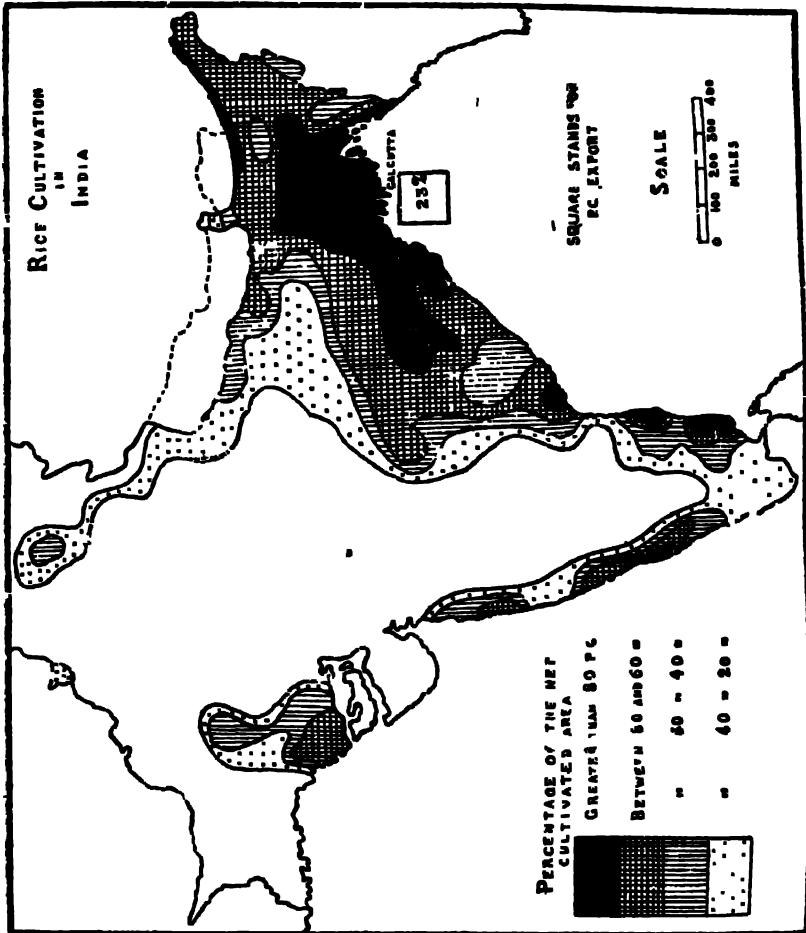


FIG No 80. Rice cultivation in India and Pakistan. Note that the rice-growing areas are practically confined to the eastern parts of the country. United Bengal raises one-third of the total production

In the Eastern Provinces including Madras, there are three rice crops in the year, known as the *Aus* (autumn), *Aman* (winter) and *Boro* (summer) according to the season in which they are harvested. The winter crop, most important of all,

is sown between June and August, and harvested between November and January. The autumn crop is sown in March-July, and harvested in September-October. The summer crop is sown between November and January and harvested in March-May.

In Central Provinces and Central India only one rice crop is cultivated. This is sown in May-June and harvested in September-November

Rice is sown in India in three ways—by broadcast, by drill and by transplantation from a seed-bed. The first method is practised where labour is scarce and the soil infertile. The second method is mostly confined to Peninsular India. The third method is common but it requires a plentiful supply of labour, because the seed-beds are to be highly manured before the seeds are sown. After four or five weeks, the seedlings are uprooted, tied into bundles and carried to the field where they are again planted by hand. The transplanting of the young plants from seed-beds to fields, cutting the rice with sickle and the husking of the grain—all involve much manual labour.

The monsoon greatly influences rice production in India. Its failure has much adverse effect on the output, because water is the principal factor in its cultivation.

The principal rice-growing provinces of India are, in order of importance, Madras, Bihar, West Bengal, United Provinces, Central Provinces, Orissa, Assam and Bombay.

AREA AND YIELD OF RICE IN INDIAN UNION (1945-46)

Provinces	Area (in 000 acres)	Yield (in 000 tons)
West Bengal .	7,933	2,853
Bihar ..	9,738	2,458
Madras	10,203	4,241
C. P. and Berar ..	6,071	1,641
Assam	4,078	1,632
Orissa	5,156	1,294
U. P.	7,045	1,837

The total acreage in the Union under rice cultivation during 1946-47 was 58.1 million acres and production 18.4 million tons

88 per cent. of the rice acreage in India is located in the Provinces and the remaining 12 per cent. in the Indian States.

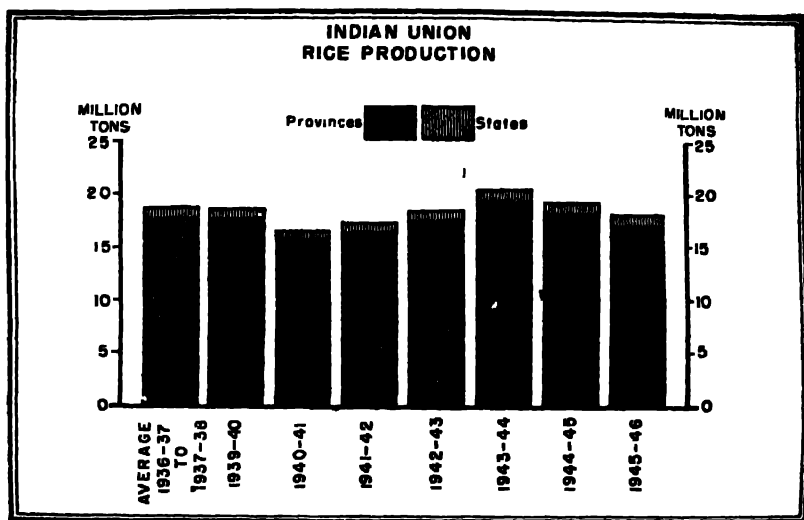


FIG No 81 Note the fall in production in 1940-41, and the peak production in 1944

The yield per acre of rice is influenced by a number of factors, such as rainfall, irrigation and soil, which are liable to vary from place to place. It also varies according to season. Summer rice generally gives the largest yield and autumn the smallest. The average yield per acre is 862 lbs and this figure does not compare very unfavourably with those of Indo-China and Thailand, but falls far short of the yields in the U. S. A., Japan, Egypt and Italy where the yields per acre are 1,485 lbs., 2,454 lbs., 2,030 lbs. and 2,940 lbs. per acre respectively.*

In every district of Bengal rice accounts for more than 60 per cent. of the sown area. About 9.5 million acres of land are under rice cultivation in West Bengal with approximately 3.7 million tons of rice as annual yield. Other areas where rice crop covers over 80 per cent. of the sown area are Cuttack, Puri and Sambaipur in Orissa; Kamrup and Goalpara in Assam, and West Godavari, Chingleput, Tanjore and Kanara in Madras. In 1942-43 Assam produced 1.6 million tons of rice, Madras 4.6

* Rice Economy in Asia (F.A.O. publication).

million tons, Central Province 1·9 million tons and Bihar and Orissa 4·5 million tons.

In spite of her normal production of 18 million tons, India is not self-sufficient in rice, and she has to import considerable quantities of paddy and rice. More than 200 million people of India eat rice and so far India has been unable to produce all the rice needed. Normally, Burma sends 2½ million tons to supplement India's production. The bulk of imports are derived from Burma and the rest almost wholly from Indo-China and Thailand.

Between 1939 and 1945 import of rice into India was almost nil. In 1946 India imported only 16,000 tons of general rice from Burma. As the world production of rice is 90 per cent in 1948-49 when compared with the average for the years 1935-39, shortage of rice is to continue. India may not be able to import rice as much as she requires because supply position will not improve unless the present political unrest in the Far East subsides.*

West Bengal has a normal deficit of 300,000 tons. Madras, Bihar, Bombay and U. P. have larger deficits but in these provinces, wheat is the staple food crop. Assam, C. P. and Orissa normally have surplus production.

There is a large scope for further cultivation of rice in India, particularly in the provinces of West Bengal, Bihar and Orissa. The three multi-purpose projects in the Damodar, Koshi and Mahanadi aim at making million acres of land cultivated. Production of rice can also be increased in the Indian Union by 50 per cent through intensive cultivation with improved varieties and better manuring.

Wheat has been cultivated in India from time immemorial. Grains unearthed from the 3,000 year-old ruins of Mohenjodaro in the Indus Valley have been identified as *Triticum Compactum*, a type of wheat cultivated in South-West Punjab.

Wheat is the staple food of the people in East Punjab, and United Provinces. India occupies the fourth place in the list of wheat-producing countries and produces about one-eighth of the world's total.

* The International Emergency Food Committee has recommended the allocation of 481,000 tons of rice to India for the first half year of 1949.

Wheat requires a large amount of heat for its grain to ripen ; but the necessary period of heat need not be very long as the grains ripen quickly. At the sowing season, wheat requires water but too heavy rain like that of Bengal, Assam and Eastern Madras is unfavourable to cultivation. The plant can endure extreme dryness provided there is provision for minimum of water by rainfall or by means of irrigation. In East Punjab and the United Provinces, where the rainfall is very small and never exceeds thirty inches per annum, wheat cultivation has become very successful with the help of irrigation.*

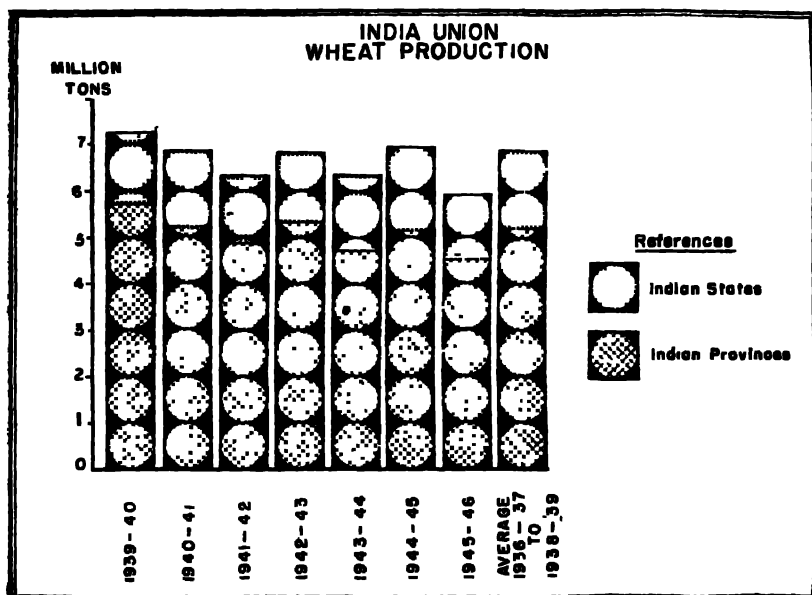


FIG No 82 Note the gradual fall in production from 1940 to 1942
The peak production was in 1939-40.

In East Punjab and Western U. P., the bulk of the crop is generally sown by the end of November. In the United Provinces and Bihar it is generally grown in late October or early November, while in the Deccan and parts of the Bombay

* In India there are two principal varieties of wheat. *the normal bread wheat* and the *macaroni wheat*. The first type grows as an irrigated crop in the East Punjab and U. P., while the second type is grown as a rain-fed crop on the clayey black soil of Bombay, C. P. and Hyderabad.

Presidency the crop is sown between September and the middle of October.

Generally wheat takes 3 to 6 months to ripen. In the south the growing period is shorter than in the north. The harvesting may begin at the end of December in the south, while in the Central Provinces and Central India, it commences normally in March. In western U. P., Delhi and eastern Punjab, harvesting is normally in full swing by the end of April.

In 1947-48 the wheat acreage was 20·2 millions and production 5·4 million tons.

WHEAT-PRODUCING PROVINCES IN INDIAN UNION 1947-48

Provinces	Area (in 000 acres)	Yield (in 000 tons)
East Punjab .	3,447	1,126
United Provinces ..	7,748	2,610
C. P. .	1,931	294
Bombay . ..	2,033	333
Bihar	1,160	362
Central India .	1,299	178
Rajputana ..	1,418	298
Gwalior . ..	764	134
Hyderabad .	200	18

Ploughing and sowing, harvesting and threshing call for a large amount of manual labour and therefore it is cultivated on a large scale in those areas where a large force of labour is available.

India grows less than one acre of wheat for every ten persons. Canada and Australia, on the other hand, have two and a half acres for each member of population. Continental countries, *e.g.*, France and Italy, have one acre of wheat for every three persons, and the United Kingdom has one for four.

The average yield of wheat per acre in India is 636 lbs. The following table shows the average yield of wheat in certain provinces and states.

AVERAGE YIELD OF WHEAT

(lb per acre)

United Provinces	.. 786	Hyderabad	.. . 231
Central Provinces	.. 444	Gwalior	. .. 458
Bihar .. ..	.. 882	Central India	. . 382
Bombay	.. 447		

The difference in yield per acre is due to the condition of water supply. The areas which are served by irrigation pro-

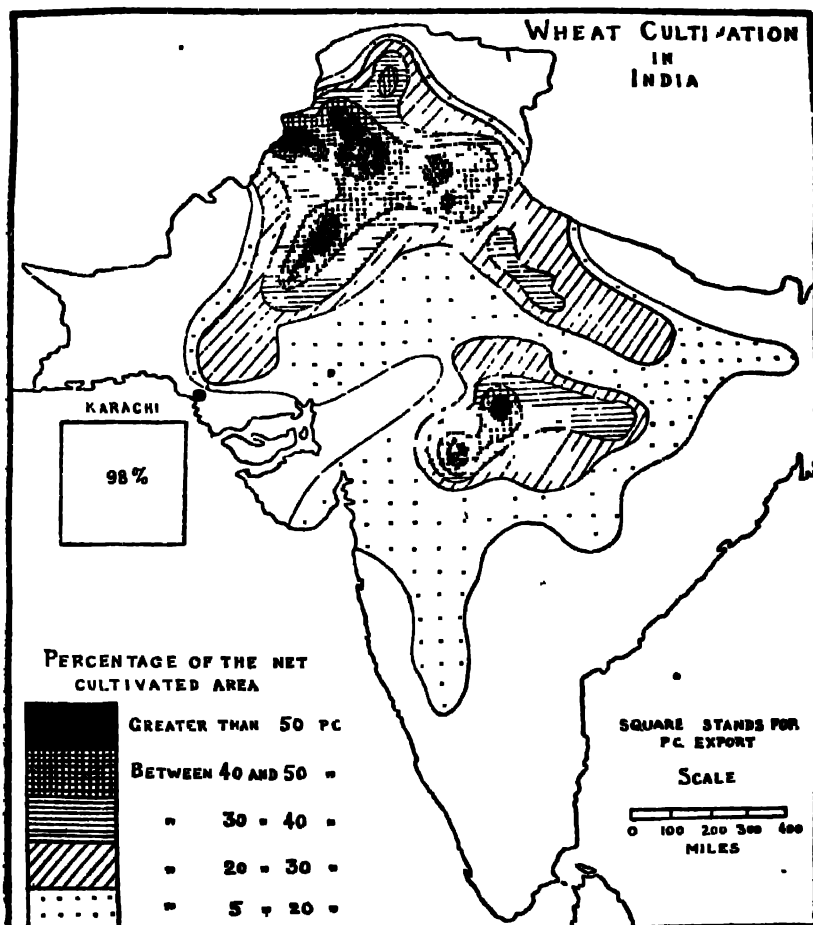


FIG. NO 83 Wheat cultivation in India and Pakistan. Note the chief wheat belt from the Indus to Upper Ganges valleys. The West and East Punjab raise nearly half the total production.

duce the higher yield while the wheat which depends only on rainfall has a lower yield.

In U. P. wheat is cultivated more or less throughout the province and the rich producing districts are Dehra-Dun, Shaharanpur, Muzaffarnagar, Meerut, Moradabad, Etawah, Shajahanpur, Budaun and Nainital, where more than 30 per cent. of the area is under wheat. The basin of the Narinada in Central Province is also a rich wheat region. Although the monsoon discourages the wheat cultivation in West Bengal, about 98,000 acres are under wheat in Murshidabad and parts of Nadia.

Nearly 45 per cent. of Indian wheat is consumed in the villages of production and the remaining 55 per cent is put on the open market.

In India the average yield of wheat per acre is abnormally low. Other producing countries use farm machinery, grain elevators, better seeds, etc., which help to increase enormously their outturn per acre. Indian cultivators are poor, conservative and illiterate and, therefore, cannot improve their methods of cultivation.

Till 1920 India used to export considerable quantities of wheat. The enormous increase of wheat production since 1920 in Canada, Argentine and Australia as well as the extension of cultivation in many European countries by protective measures such as heavy import duties and the quota system, have resulted in considerable decline of demand on Indian wheat. Till 1914 the export of wheat from India was 14 per cent of the total output, but in 1938-39 the percentage was only 2·8. Since 1942 there has been practically no export of wheat from India, firstly because of war up to 1945, and secondly because of partition of the country which has made the West Punjab wheat unavailable to the Union.

Indian wheat is mostly exported in June and July when most of the important producing countries have exhausted their stock and when new wheat is not generally available. It should be noted that in Canada, U. S. A., South Africa, Australia and Argentina the harvesting season begins in August and lasts till December ; while in India it begins in March and lasts till May.

The scope for further production of wheat is indeed great in East Punjab and U. P. but then in future exports may not increase, because the increasing population will require more wheat.

Millet is the staple food of the agricultural population of Madras, Bombay and the adjoining districts of Hyderabad. It flourishes best in hot lands which are fairly dry. It can be grown without irrigation even in areas where rainfall is scanty.

There are two varieties of millets in India—Jowar and Bajra.

Jowar is extensively cultivated in the Deccan, and also to some extent in other dry parts of India. The area under cultivation in 1946 was 38 million acres and the yield was 5 million tons. Bombay, Madras, C. P. and Hyderabad account for more than 50 per cent. of the total acreage under jowar in India. Other provinces are East Punjab, Gwalior, Rajputana and Central India. In the Sholapur district of Bombay more than 60 per cent. of the sown area is under jowar. In Poona and Belgaum districts the acreage under jowar accounts for jowar accounts for more than 50 per cent. of the sown area. Jowar is commonly called *Sorghum* in Europe and America. In India, the product is of great importance both as food and as fodder.

Bajra is a short season crop and is grown generally in poorer soils. It is less widely cultivated and is essentially a village food crop. Bombay, Madras, East Punjab, Hyderabad and the Rajputana States are the principal producers. The area under cultivation was 28 million acres in 1947 and the yield in the same year amounted to 3 million tons. More than two-thirds of the acreage under bajra is confined to Bombay, Madras, U. P and East Punjab. In Bhavnagar (in Kathiawar) bajra covers more than 60 per cent. of the sown area.

One-fourth of the total production of millets is exported and the destinations are Sudan, Arabia, Holland, Germany, Italian East Africa and Aden. More than 90 per cent. of the millet is shipped from Bombay.

Barley resembles wheat in general appearance and manner of growth. It is a winter crop in India and is sown in October and November. The harvesting season begins in March. India

raises nearly 5 per cent. of the world's total barley. It is mainly grown in Northern India and the U. P. has the largest acreage.

The Union has an area of about 6 million acres under barley with average annual production of about 2 million tons.

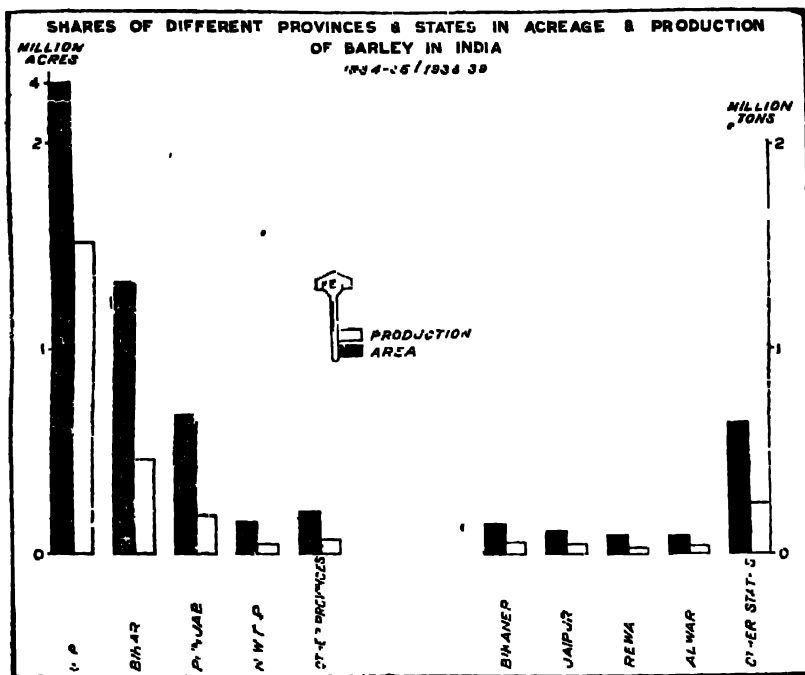


FIG. No. 84 U P. has the largest acreage and production.

Its cultivation is very extensive in the Ganges basin of the U. P., particularly in the districts of Benares, Jaunpur, Gazipur, Ballia, Pratabgarh, Azamgarh and in Garhwal. Its cultivation also covers a large percentage of the total sown area in Central Kashmir and Muzaffarpur in Bihar. The internal demand for barley is so high that exportable surplus cannot attain considerable dimensions. India in 1939 exported 9,000 tons of barley of which U. K. took 8,600 tons. The next important buyer is Arabia.

Maize is found more or less all over India, but Northern India raises the major portion. Maize requires high temperature and much more summer rain than wheat. The soil should be rich and well drained. Most of the maize is grown in regions

with an annual rainfall of at least 20 inches. The total area under maize is about 6·5 million acres with an average annual production of 2 million tons.

The U. P., Bihar and East Punjab are the leading producers. Maize cultivation is practised throughout U. P. and Bihar, although the Upper Ganges valley has a larger acreage. North-Eastern Punjab and South-Western Kashmir are also rich producing areas.

The crop is raised mainly for consumption in the areas of production, and exports are never considerable. In 1933 India exported an insignificant quantity of maize, only 38 tons. Exports gradually increased to a certain extent and she exported more than 200 tons in 1936. Exports are mainly from Bombay, and Calcutta. Bombay alone sends more than 50 per cent.

In recent years certain industrial firms of the Indian Union have developed the production of starch and glucose from maize.

Pulses include food grains like gram, arhar, lentils or masur, etc. These grains are raised in different parts of India and consumed mostly in the areas of production. These grains are important both from the point of view of husbandry and of nutrition. Their nutrition value is great as a source of protein. More than fifty million acres of land accounts for the cultivation of pulses in India. Pulses constitute an important food-stuff not only for villages but for animals as well. They are also grown as rotation crops to restore the fertility of the soil.

Gram is the most important pulse and is grown extensively in the United Provinces. Other producing areas are Bihar, East Punjab and Central Provinces, Bombay, Hyderabad and Mysore. The average annual output is nearly 4 million tons and the acreage exceeds 15 million. Gram is often cultivated in combination with wheat.

The percentage of acreage is greater in Southern United Provinces (between Agra and Mirzapur), North-East Punjab, Central Bihar, South Mysore and in North-East C. P. Local consumption being great, exports of gram are never considerable. In 1938-39 India exported 17,000 tons of gram of which France took 7000 tons and Ceylon 3000 tons. Other customers

are the Straits Settlements, the Mauritius and Aden. The principal port through which gram is shipped is Bombay.

The Lentil or Masur is grown particularly in the Central Provinces, Madras and the United Provinces, though in other provinces its cultivation is not uncommon. "*Arhar* is one of the most important food-stuffs of the country-side and is generally grown as a mixed crop, particularly in rotation with cereals." The annual production of these two pulses is very considerable. The exports of pulses are made to U. K., Ceylon, Mauritius, Burma and France. Calcutta, Madras and Bombay participate in the trade.

Tea : India is the second largest tea-producing country in the world. The region of Indian tea cultivation is a wide one. Beginning with the Himalayan plantations in the Punjab near 33°N. latitude, it extends to the Peninsular India between 10° and 13°N. latitude. The principal belt of tea plantations lies between 23° and 32°N. latitude.

Tea plant requires a deep fertile soil, which must be exceptionally well-drained, so that there may not be stagnant water on it. It is, therefore, generally grown on hill-sides. High temperature is essential for tea cultivation.

Seventy three per cent. of Indian tea is obtained from Assam and West Bengal. In recent years, Southern India has become an important tea-producer and she contributes nearly 18 per cent. of the Indian output.

AREA UNDER TEA IN THE DIFFERENT PROVINCES OF INDIAN UNION 1947

Provinces	Area (in 000 acres)	Provinces	Area (in 000 acres)
Assam ..	.. 366	Mysore ..	.. 5
West Bengal .	. 169	Travancore ..	.. 77
Bihar ..	.. 4	Tripura State ..	.. 11
Madras ..	.. 78	Cochin ..	.. 2
East Punjab ..	.. 10		
U. P. ..	.. 6	Total ..	725

The yield in the same year was 595 million lb. in the Union which is a record figure.

Assam is the largest producer and contributes more than 60 per cent. of the total Indian tea production. In the districts of Darrang, Sibsagar, Lakhimpur (in the Upper Brahmaputra valley) and in Cachar tea plantations cover more than 30 per cent. of the sown area. The Sadia Frontier Tract also grows a large amount. These areas are served magnificently by railways and rivers.

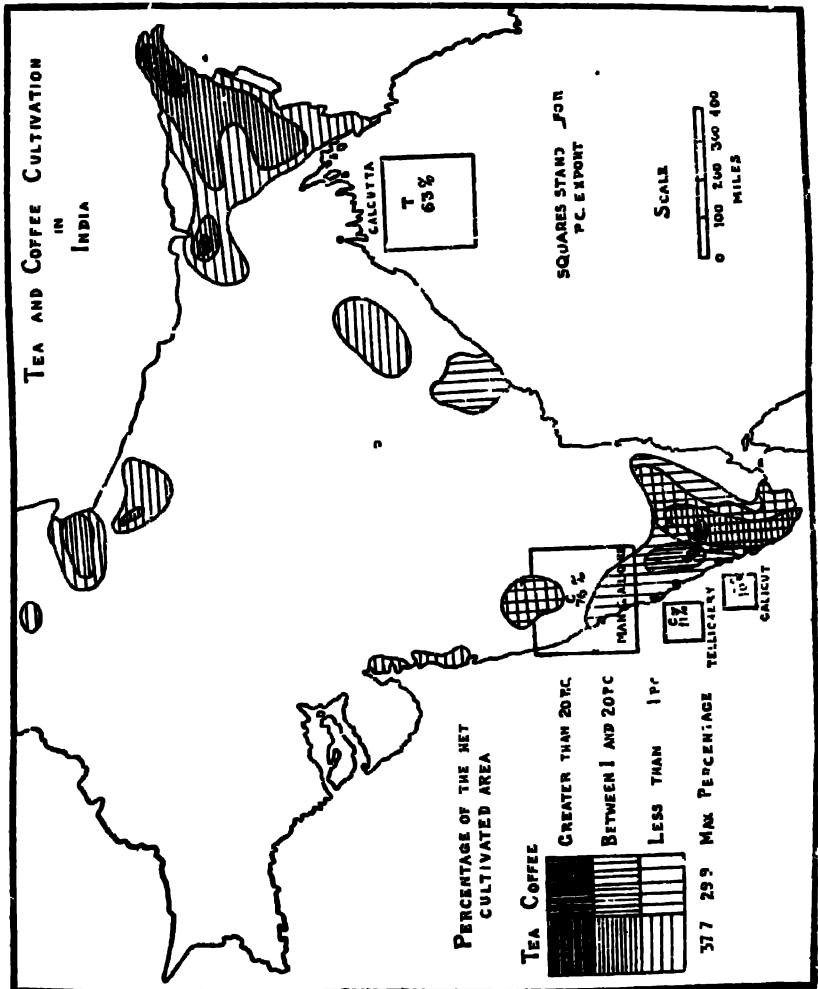


FIG. NO. 85. Note the extensive tea belt from North East Assam to North East Bihar. More than 50 p.c. of Indian coffee is obtained from Mysore.

Although West Bengal occupies the second position in the list of tea-producing provinces, her tea cultivation is not so extensive as that of Assam. The two adjoining districts of Darjeeling and Jalpaiguri produce almost the entire output of the province. West Bengal production varies between 20 to 25 per cent. of the Union's total. The Tripura State raises a small quantity. Tea is also grown in Purnea, Ranchi and Hazaribag in Bihar ; Garhwal and Almora in the U. P. ; and Kangra in East Punjab. In Southern India, the major portion of the output is raised by Travancore and Madras ; the other areas are Coorg, Mysore and Satara (Bombay).

India is the greatest tea-exporting country in the world, supplying as she does more than 50 per cent. of the world's trade in tea.

EXPORTS OF TEA FROM THE PRINCIPAL TEA-GROWING COUNTRIES

		(in million lbs)		
Countries		1936	1937	1938
N India	.	314 9	340 1	353 6
S. India	...	51.6	53 5	55.8
Ceylon	..	218 0	213 2	235 7
Java	.	123 0	117 2	126 3
China	...	82 2	89 6	91.8
Sumatra	...	30 1	29 5	31 5
Japan and Formosa	.	57.4	77 3	59.8
Others	..	19 3	23.9	25 8
Total		896.5	944 3	980.3

India exports usually 76 per cent. of the total tea production of the country. The recipients of Indian tea are the U. K., France, Canada, U. S. A., Australia and New Zealand. In 1939 India exported 350 million lbs. of tea to the following countries :

U. K.	...	..	305 million lbs
Canada	...	..	15 " "
U. S. A.	...	..	8 " "
Ireland	...	..	3 " "
Iran	...	..	5 " "

In these foreign markets, Indian tea has to compete with the tea of Ceylon, China and Java. During World War II, India and Ceylon were the only suppliers of tea to the world market because Java, Japan, China and Sumatra were in the war zone and their tea production was very much disturbed. Till the production position of these countries improves, Indian tea will have great demand in the world market.

The share of Calcutta in the total export of tea is usually 83 per cent. and the remainder is shipped from Madras.

The export of Indian tea is regulated according to the terms of the *International Tea Agreement of 1933*. Between 1927 and 1932, there was a great over-production of tea in the different producing countries, as a result of which prices fell below the cost of production. On 1st April, 1933, an agreement was reached by India, Ceylon and Java which contained the following points:

“(a) That the exports of tea from the producing countries be regulated in order to restore equilibrium between supply and demand ;

(b) That the government of the respective countries will undertake to prohibit exports in excess of the quotas agreed upon ;

(c) That the agreement shall be for a period of five years ;

(d) That the existing tea area must not be extended during the said period of five years except in special cases where the existence of an estate would otherwise be imperilled ”

According to the Agreement, India's standard quota was 380 million lb.

In 1938, the agreement was renewed for another five years. During the war years of 1939-45, India's export quota was increased to meet the world shortage of tea. A Board has since been formed in India to look after the interest of the Indian tea industry. Its name is the *Indian Tea Marketing Expansion Board*. By means of propaganda, the Board is popularising Indian tea in villages and towns.

The new International Tea Agreement has been signed by India for a period of two years commencing from 1st April, 1948. Standard exports for India and Pakistan together have been fixed at a little over 383 million lbs.

Coffee. The systematic cultivation of coffee in India was started from 1830 when a large plantation was opened in Mysore. Southern India has the monopoly of coffee cultivation in India.

The coffee plant requires a rich well-drained soil, a warm climate and a moderate supply of moisture. Three to five years are required for the plant to mature after which it bears for some thirty years.

In India the plant is sown in the rainy season and the berries begin to ripen in October. Plucking and hand picking of berries continue till January.

Nearly 2,00,000 acres of land are under coffee plantations and the average yield exceeds 35 million lbs. In 1946-47 coffee production in the Union was 323,000 bags which gave 65,000 bags for export.

Provinces		Average Area (in 000 acres)	Average Produ (in 000 lbs.)
Mysore	...	101	16,455
Madras	.	54	7,322
Coorg	.	42	9,249
Cochin	.	2	...
Travancore	...	1	...

Seventy p.c. of Coffee acreage is Indian-owned and 30 p.c. European-owned.

Southern India has nearly 7,000 coffee plantations which engaged 65,000 permanent labourers and 35,000 temporary labourers. Mysore alone possesses 4,600 plantations. In Mysore, the plantations are mostly confined to the south and west, particularly in the districts of Kadur, Shimoga, Hasan and Mysore. Mysore has the largest acreage under coffee plantation and the production is always over 50 per cent. of India's total. In the Madras Presidency coffee plantations are found mostly in the south-west—from North Arcot to Tinnevelley including the western areas. The Nilgiri is the most productive area of Madras. Some plantations are also found in Vizagapatam in the north-east. Madras contributes nearly 23 per cent. of the Indian output. In Coorg more than 20 per cent. of the total acreage is under coffee and the region supplies more than 1 per cent. A little coffee is also grown in the Satara district of Bombay.

Fifty per cent. of the annual production of coffee is consumed in India. The Indian coffee industry is therefore very much dependent upon foreign markets.

Indian coffee is exported to 'U. K., France, Germany, Holland, Belgium, Australia and Iraq. Participating ports in the export trade are Mangalore, Tellicherry, Calicut and Madras (Mangalore 76 p.c., Tellicherry 11 p.c., Calicut 10 p.c., Madras 3 p.c.). The exports of Indian coffee have fallen off considerably as a result of the competition of Brazilian coffee which to-day dominates the coffee market of the world. The Indian Coffee Cess Committee is now engaged in finding out markets for Indian coffee, both in India and abroad. Propaganda in the U. K. and other parts of Europe is being conducted. In India coffee houses have been opened in several towns like Lahore, Calcutta, Bombay, New Delhi and Secunderabad.

The **Tobacco** plant was first introduced into India by the Portuguese in 1508. It has a wide climatic range and is cultivated in India throughout the country. The harvesting period is between February and April.

India is the second largest tobacco-producing country in the world, and contributes about 35 per cent. of the world's total. India together with U. S. A. and China account for 60 per cent. of the world's tobacco growing areas, which is of the order of 7·2 million acres. Nearly 1 million acres of land are under tobacco cultivation and the average production is about 4,00,000 tons a year.

Tobacco cultivation is geographically confined to two main zones—the Eastern zone, comprising Bihar and the Southern zone which comprises Madras, Mysore and Bombay.

The districts of Muzaffarpur, Darbhanga, Monghyr and Purnea produce 90 per cent. of Bihar tobacco. In Bengal, tracts are Jalpaiguri and Cooch Bihar ; some quantities are also raised in Hooghly.

In Madras, the important tobacco-growing districts are Guntur, Vizagapatam, East Godavari, Coimbatore and Madura. Two-thirds of the total acreage of Madras are confined to Guntur.

In Bombay, the tobacco-growing regions are Belgaum, Satara, Baroda and Kaira.

Outside these two zones, tobacco is cultivated in the East Punjab, particularly in the districts of Jullundur, Hosiarpur and Gurudaspur ; and also in the Bidar district of Hyderabad.

The leaf produced in India is generally of a coarse, heavy type, with a dark colour and a strong flavour and, as such, it is unsuitable for cigarette-making. Indian leaf makes an excellent filler. The loose cotton soil combined with the moist climate of Guntur, Kristna, East and West Godavari districts produce the best type of virginia. These districts alone yield 95 per cent. of India's cigarette tobacco. Guntur is the chief market. The production of tobacco similar in colour, flavour and texture to the recognised virginia tobacco is being raised in Madras and Bihar.

The bulk of the tobacco grown in India is consumed in the local areas, and the exportable surplus is never considerable. In 1938-39 India exported 27,563 lbs. of tobacco of which unmanufactured tobacco accounted for 20,000 lbs. Madras contributes nearly 70 per cent. of the total export. The next important province is Bombay whose share is 25 per cent. of the export trade. The principal destinations of tobacco are U. K. , Aden and Japan. The U. K. has always been the chief market for Indian tobacco.

The Government of India have set up a Tobacco Committee which pays attention to the improvement of flavour and aroma of the Indian tobacco and also to the problem of production, processing and marketing. If proper attempts are made, Indian Union can curtail the imports of finer grades of cigarettes as well as create markets in the Middle East, Europe and Pakistan for tobacco.

There is a great future for tobacco industry in India. India's annual consumption of cigarettes is estimated at several millions. About 90 per cent. of the huge consumption of cigarettes is produced by foreign interests, while 3 per cent. represents direct import and only the remaining 7 per cent. is indigenous production.

Sugar-cane. India is not only the original home of the sugar-cane but she is also the largest producer in the world. Although sugar-cane is cultivated throughout India, the most important sugar-cane tracts are in the U. P., Bihar, West Bengal,

East Punjab and Bombay. In fact, Northern India has a preponderant interest in the crop.

AREA AND YIELD OF SUGAR-CANE IN 1945-46

Provinces	Area (000 acres)	Yield of raw (000 tons)
United Provinces ..	1,818	2,223
Bihar ..	381	392
East Punjab ..	314	395
West Bengal .	67	102
Madras ..	161	437
Bombay .	123	420
Indian States .	148	270
Total	3,204	4,548

The sugar-cane acreage in the Union in 1947-48 was 3·7 millions and production 4·9 million tons.

"The average yield per acre is so low and the demand from a population that is largely vegetarian so great that the country

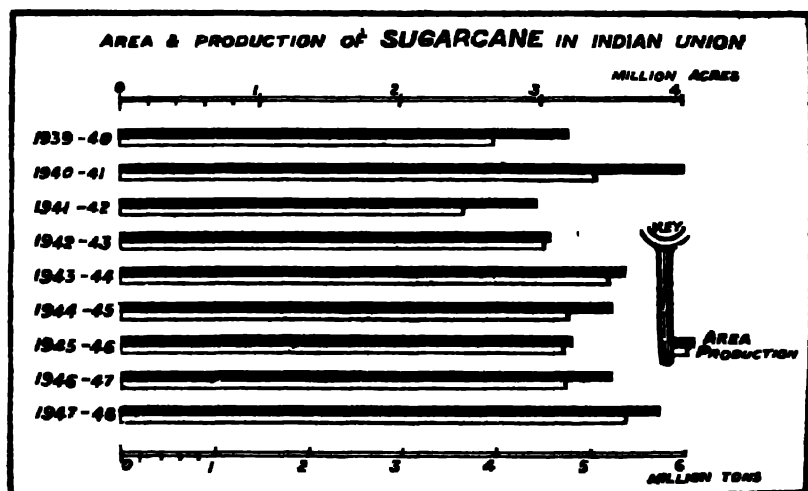


FIG. No. 86. Note the greater production with lesser acreage in 1947-48 than that of 1939-40.

had to depend to an increasing extent on the imports of foreign sugar." Recently much progress has been made in sugar-cane

cultivation in India. The average area under sugar-cane is nearly 4 million acres. Even 10 years ago, the acreage under sugar-cane was between 2·5 to 3 million acres. This great increase in acreage is the result of the grant of fiscal protection and the introduction of the improved varieties of sugar-cane.

The protection of the sugar industry will be continued upto 31st March 1950.

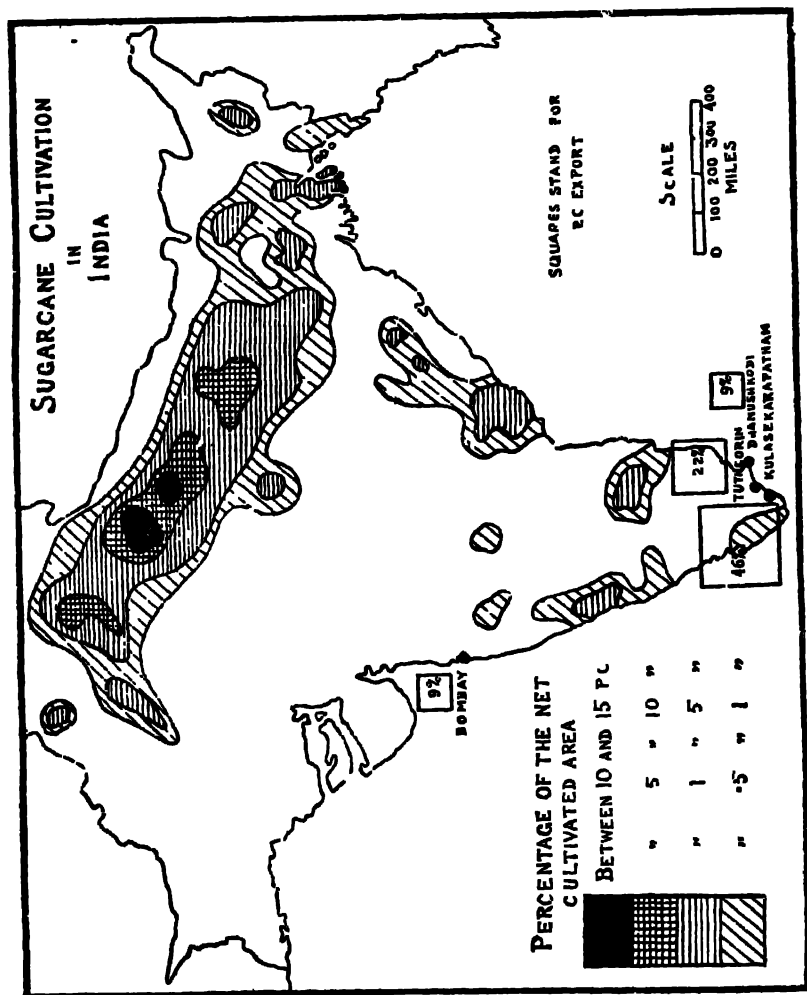


FIG. No. 87 Note the great concentration of sugar-cane cultivation in the Ganges valley. The U. P. alone raises more than 50 p.c. of India's raw sugar.

The United Provinces produce more than 50 per cent. of India's total output. The plant is cultivated throughout the province and the higher acreage is devoted to it in Shaharanpur, Shahajanpur, Fyzabad, Gorakhpur, Azamgarh, Ballia, Jaunpur, Benares and Bulandshahr. In Bihar, the important districts are Champaran, Saran, Darbhanga and Muzaffarpur.

East Punjab which is the third largest sugar-cane producing province in India with a produce less than one-tenth that of the U. P., cultivates the plant extensively in Amritsar, Jullundhar and Rohtak.

West Bengal also produces a large quantity of sugar-cane, but the quality is poor. The producing districts are Birbhum, Burdwan and Nadia. About 67,000 acres of land are under sugar-cane in West Bengal.

It has been estimated that "in actual sugar, India's production per acre is less than one-third that of Cuba, one-sixth that of Java, and one-seventh that of Hawaii." This weakness of the Indian sugar industry is due to (a) unscientific cultivation; (b) small and scattered nature of the holdings; and (c) the impossibility in most cases to concentrate cultivation round a central factory. Consequently, the price of sugar-cane has remained high. Sugar-cane cannot be cheaper unless the country produces more of it by increasing the *yield per acre* and not by increasing the area of cultivation.

Recently, improved varieties of sugar-cane are being raised in different provinces. The improvement of sugar-cane cultivation and the study of its pests and diseases are being carried on at the Indian Central Sugar-cane Committee.

Jute is the most important bast fibre of India and is an object of world commerce. India enjoys a monopoly as the world's sole producer of jute on an extensive scale. "The demand for jute in the world's markets is based upon the fact that no cheaper fibre is procurable for bagging agricultural produce." The cultivation of the plant is restricted mainly to the Ganges-Brahmaputra delta in Bengal and Assam and in Bihar and Orissa, where the soil is enriched by alluvial deposits brought by river inundation favouring the growth of this exhausting crop without any expenditure on manure. Jute is sown from March to May and it grows to a height of ten to

twelve feet. The harvesting period begins in July and extends to September.

Jute requires for its successful cultivation a hot damp climate in which there is not much rain in the early part of the season. It grows best on a loamy soil or rich clay and sand, although the bulk of the total quantity of jute grown in Bengal is cultivated on *chars* and sand banks and island formed by rivers.

The fibre from the stem is separated after the plant is retted in a pool of stagnant water for 2 to 25 days according to the nature of the water. Though the usual practice is to do the retting in tanks and roadside stagnant pools, in some districts the plant is submerged in rivers also.

JUTE GROWING AREAS IN INDIAN UNION

Provinces		AREA (in 000)	AREA (in 000 bales of)
West Bengal	..	198	550
Bihar	..	159	403
Orissa	..	20	44
Assam	..	173	536
Cooch Behar	..	20	99
Tripura	..	10	26
Total		580	1,658

In Bihar over 90 per cent. of jute cultivation is concentrated in the district of Purnea; in Orissa more than 92 per cent. of jute is raised in the Cuttack district; and in Assam jute is raised throughout the Brahmaputra valley.

Jute is produced mainly for foreign markets. The destinations of jute are U. K., Germany, Japan and U. S. A. Raw jute constitutes a small portion of the total jute exports. The principal buyers of Indian jute are U. K., U. S. A., France, Italy, Brazil, Japan, Belgium, Germany and Spain. The U. K. alone takes nearly one-third of the total exports.

Now that India has been partitioned, and 73.4 per cent. of the raw jute of undivided India comes from Eastern Pakistan, Indian Union ceases to be an exporter of its own raw jute. The Union will require raw jute from Pakistan.

The total area under jute in 1947 in the Indian Union was 646,000 acres and the production was 16.58 lakhs bales. *Indian Union's deficit in jute supply is about 5,400,000 bales. Accord-*

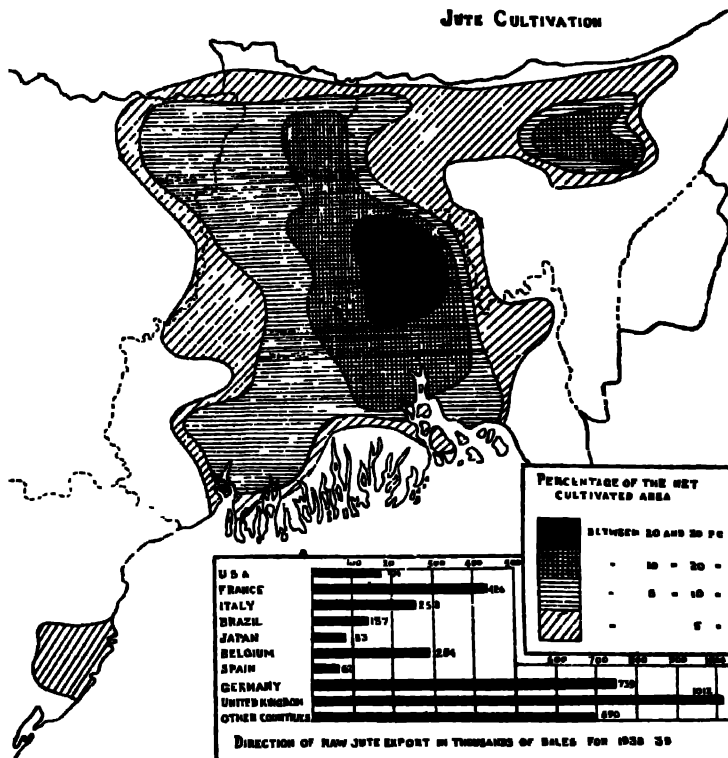


FIG No. 88 In undivided Bengal less than 10 per cent of the cropped area raised over 85 per cent of the total Indian jute and, as such, the product exerted a tremendous influence on the economic life of the province. The main jute belt which accounts for nearly four-fifths of the total acreage under jute in Bengal, is in Eastern Pakistan.

ing to the Jute Agricultural Research Department, very soon 330,000 additional acres of land will be put under jute cultivation in provinces and States as follows :

West Bengal ..	100,000	Travancore ..	50,000
Bihar ..	50,000	Madras ..	20,000
Orissa ..	50,000	Cooch Behar ..	5,000
Assam ..	50,000	Tripura ..	5,000

The Agricultural Research Institute has introduced a *new system of cultivation, as a result of which, not only has the cost of cultivation been lowered, but the yield and quality improved considerably.*

Jute is usually sown broadcast, and when the seedlings grow they are thinned out to ensure a rich crop. This system of cultivation involves wastage of seed and requires hand labour at the time of weeding.

Under the new plan, jute is sown in lines, and not broadcast and the seeds are grown three to four inches apart in furrows drawn at intervals of one foot. In line-sown jute all subsequent operations, such as periodical weeding between the beds, are done by means of wheel hoes.

As a result of the production drive the jute yield in the Union in 1949-50 is expected to be 32 lakhs of bales.* To encourage further extension of jute cultivation, it is desirable that there should be fixation of minimum prices for jute in areas where jute growing may be unremunerative.

From April 1948 India and Pakistan raised export duties by 33½ per cent on raw jute and jute manufactures. The raising of duty on raw jute coming from Pakistan to Indian mills would add heavily to the ultimate cost of jute manufactures in India. The increased cost of jute manufactures would adversely affect the exports from India and encourage the use of substitutes in consuming countries. As Pakistan has no jute mills, any fall in the demand for Pakistan jute by the Union will affect adversely the finance of Pakistan. It is necessary to emphasise here that the cultivation of jute is not the monopoly of India and Pakistan only. It is also raised in Egypt, Iran, Siam, Indo-China, Japan, Formosa, Brazil, Paraguay and Mexico. Moreover, jute-like fibres are being raised in many countries. Belgian Congo cultivates *Urena lobata* fibres and every year the production is increasing. Java has become almost self-sufficient so far as sugar bags are concerned by cultivating extensively a jute-like fibre called *Rosella*. A similar fibre called *Kenaf* is grown in

* An all-out effort is now being made by the Central Ministry of Agriculture to make India self-sufficient in jute by 1951.

The increased production during the past two years coupled with the new measures being adopted by the Government of India's Research Institute in Chinsurah, justified the expectation of the country's self-sufficiency in jute within the next two years.

Manchukuo, and is used in making bags for soya beans. *Manila hemp* in the Philippines and *Polompon* in Indo-China are similar to jute.*

Hemp. There are three varieties of hemp in India—Sisal hemp, Sann hemp and Indian hemp. As a fibre, Sann hemp is the best and is grown in Bombay, the Central Provinces, the United Provinces and the districts of Godavari, Kistna and Tinnevely in the Madras Presidency. Large quantities of raw sann are exported to the U. K., Belgium, Italy, France and Germany. Indian hemp is more important for narcotics in the form of *bhang*, *ganja* or *charas* than for fibre. As a source of fibre it is now grown in the North Himalaya region comprising Nepal, Simla, Kashmir, Kumaon and Kangra.

Sisal hemp has been least exploited commercially. It is grown in Tirhoot, Bombay and Southern India.

Cotton. India is the second largest cotton-producing country in the world, preceded by the United States of America only. In spite of the fact that she occupies the second position,

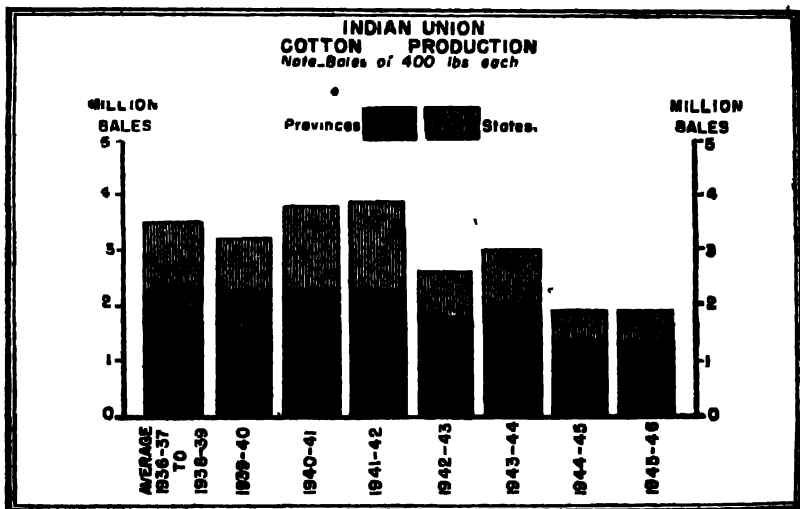


FIG. No. 89 Note the decline in cotton production after 1944-45
The peak production was in 1941-42

her share in the world-production is less than one-fifth. Besides, the quality of Indian cotton is inferior. Indian cotton is of a short staple and is good for coarse fabrics only. Cotton holds the first place among the commercial crops of India.

Cotton has a considerable climatic range. It grows in the dry region of Bombay as well as in the moist province of Bengal. Generally speaking it is a dry-region crop and flourishes where the rainfall is less than 40 inches. The soil is equally important. The sticky black soil of the Deccan is ideal for cotton cultivation. Cotton is cultivated in Bombay, C. P., Berar, Madras, U. P., Hyderabad, Central India, Baroda, Rajputana and Mysore. Half the total area is confined to Bombay and Berar. There are two varieties of cotton in India : (i) The Indian or short-staple cotton and (ii) the American cotton.* The bulk of the production comes in the shape of Indian cotton. In recent years, some progress has been made in the Indian Union in the production of long-staple cotton.

In India, cotton is considered long stapled when the fibre is one inch long. When the fibre is less than 17"/32" it is known as short-staple.

Areas of short-staple

C. P., Berar, Khandesh.
Central India, Rajputana,
U. P.

Areas of long-staple

Gujrat, part of Kathiawar,
Southern Bombay, large por-
tions of Madras.

The area under cotton in the Indian Union in 1947-48 was 10.9 million acres and production 2.1 million bales (of 400 lbs. each).

The Central Cotton Committee is engaged to improve cotton cultivation in India. The Committee raises a cess of two annas a bale on all cotton produced in India to meet its necessary expenses.

Indian cotton, being for the most part short-staple, is unsuitable for the manufacture of cloth of higher counts such as that turned out by the Lancashire mills.

Before the partition, India was the second largest cotton exporting country in the world. The chief consumers of Indian raw cotton were Japan, United Kingdom, Italy and China. Japan occupied the most dominant position among the consumers of Indian cotton, taking more than 60 per cent. of

* The commercial varieties of Indian cotton are known as Bengal, Americans, Oomras, Surti and Dholleras. About one-third of the Indian cotton belongs to Oomras variety.

our total export. This was due to the gradual development of cotton industry in that country. Japan was not in a position to grow cotton and depended for her supply of the raw material partly on India and partly on the U. S. A. Among the European countries, Germany used to take large quantities of our cotton before the War.

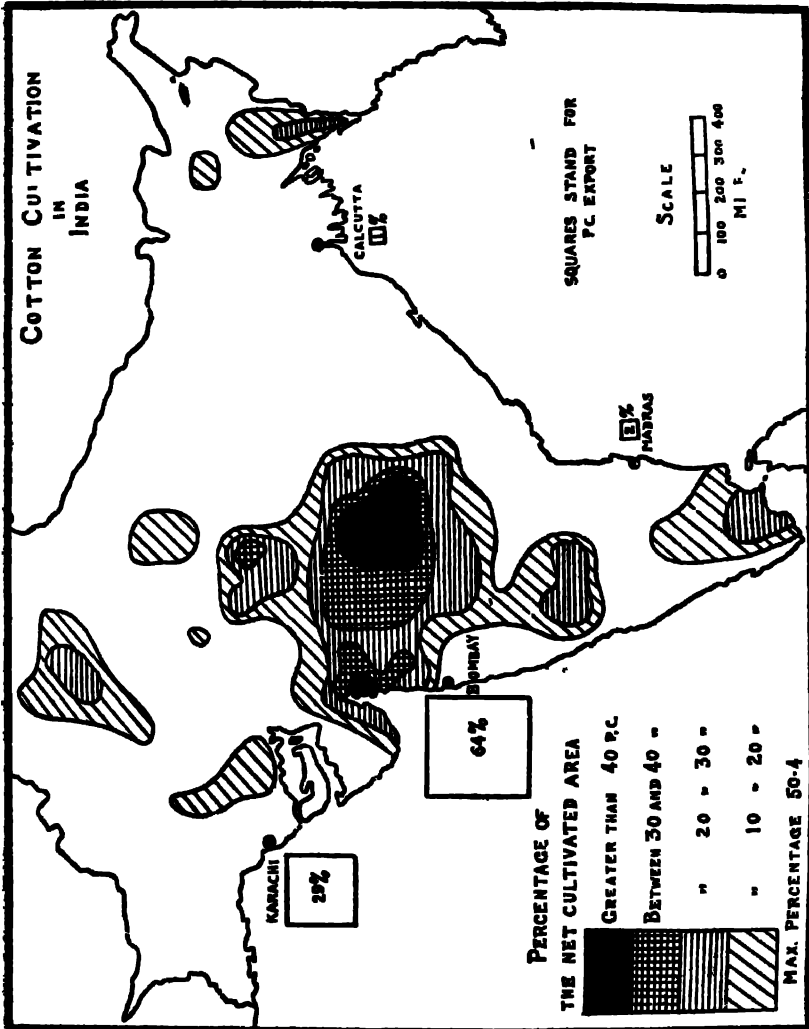


FIG. No 90. Cotton cultivation is mostly confined mainly to the Black Soil region of the Deccan comprising Gujrat, Central Province and Berar.

Indian Union cannot now export raw cotton. Pakistan, on the other hand, has become one of the leading raw-cotton exporting countries in the world. Indian Union imports long staple cotton from Pakistan to the extent of 8 million bales.

Recently an agreement has been reached between India and Pakistan according to which India is to give 12 bales of cloth in exchange for every 20 bales of raw cotton.

Oil-seeds. The trade in oil-seeds is very recent in India. Oil-seeds are in demand not only for salads and food, but also for preparing medicines, perfumeries, varnishes, lubricants, candle, soap manufactures and other purposes. The principal oil-seeds found in India are linseed, groundnut, cotton-seed, rape-seed, castor, sesamum-seed, copra, mowra-seed and polly-seed.

India is one of the leading oil-seed producing countries of the world. With the exception of palm kernels, olives and soya beans, she raises all the principal oil-seeds for world trade.

A large quantity of seeds is exported annually and this export forms a big item in India's foreign trade, and it occupies the fifth place among the exports. It is felt that India does not yet make the best use of her oil-seeds resources, though attempts have been made to develop local oil-crushing industry.

INDIA'S SHARE IN THE WORLD TRADE OF OIL-SEEDS (On percentage basis)

Mowra Seed	...	...	.	...	100
Niger Seed	...	...	..	...	100
Poppy Seed	...	..	...	...	75
Castor Seed	...	.	...	...	100
Rape Seed and Mustard	...	...	...	...	36
Groundnuts	...	...	...	...	29
Linseed	...	...	...	...	13
Sesame Seed	...	...	...	...	3
Cotton Seed	...	...	...	...	1

Oil-seeds occupy about 8 per cent. of the net area sown under all crops, and the production exceeds seven million tons annually.

Out of a total area of 23·8 million acres of land under oil-seeds in India, 84 per cent. now belongs to the Indian Union, 8 per cent. to Pakistan and the remaining to Hyderabad.

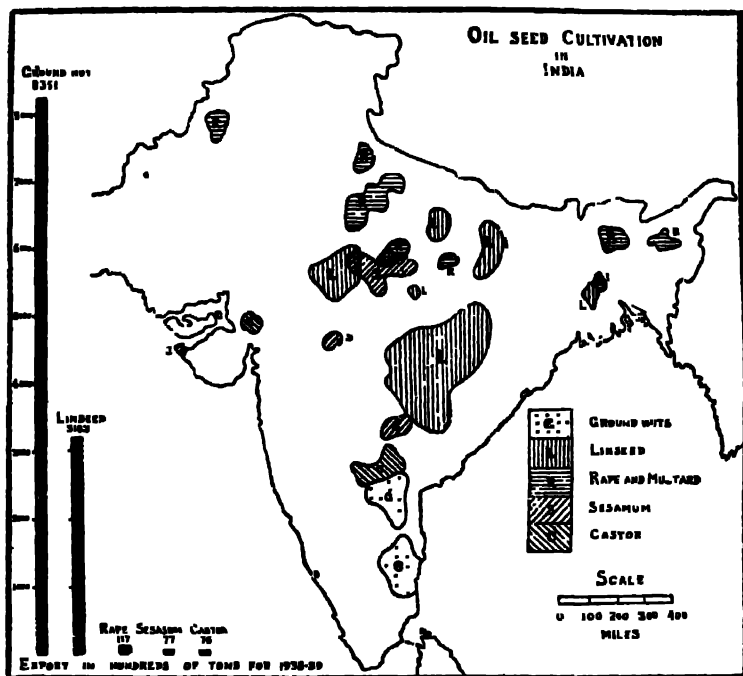


FIG. NO. 91 Distribution of oil-seeds in the country. The ground-nuts are practically the products of the Peninsular India.

Linseed. India is the third largest linseed-producing country in the world. Although it is one of the oldest fibre plants of India, linseed is cultivated for its seed only. The plant requires the same kind of land as wheat and is grown as soon as the monsoon is over. The harvesting begins in February.

Linseed is mainly a rain-fed crop. The average rainfall between 30 and 70 inches per annum is best suited for its cultivation. Linseed is cultivated for its seed mainly in Central Province, Bihar, Orissa, the United Provinces, Bombay and Bengal. It is also cultivated in Hyderabad, the East Punjab and Kotah. In 1938 India raised about half a million tons of linseed in four million acres of land.

AREAS UNDER CULTIVATION OF LINSEED IN 1940-41

	Area (in 000 acres)	Yield (in 000 tons)
C. P. ...	1,218	97
United Provinces ...	841	161
Bihar ..	534	71
Bengal ...	155	22
Bombay ..	96	10
Punjab ..	33	2
Hyderabad ..	454	43
Others .	167	25
Total India .	3,606	432

Practically all the products are exported to the United Kingdom, France, Belgium, Italy and Holland.

As regards exports, Argentina is a formidable competitor of India. The following figures will indicate the nature of the competition.

	1913	1929	1932	1935
Argentina .	676	1,590	1,995	1,541
India ..	368	251	77	306

Rape-seed, the Indian name of which is *Saison*, is grown with wheat. It is often confused with mustard (Rye). Its cultivation is restricted to the northern part of India, and the

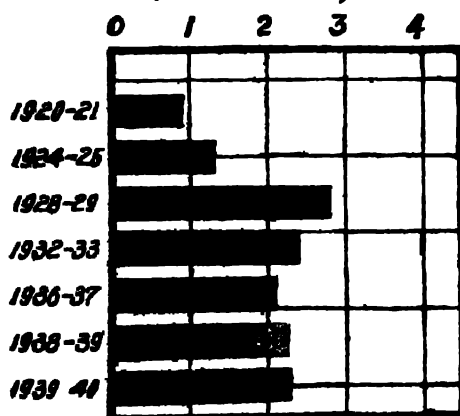
GROUND NUT IN INDIA
(Million Tons)

FIG. NO. 92. The production gradually increased after 1936-37.

principal provinces are the United Provinces, Bengal, the Punjab, Bihar and Orissa. U. P. alone supplies more than 50 per cent. of India's total. Rape-seed is exported to the United Kingdom, Italy, Belgium and France. 98 per cent. of exports pass through Karachi.

Groundnut. India is the largest groundnut-producing country in the world, followed by French West Africa

China, U. S. A. and the Dutch East Indies. It is essentially a tropical product and as such is grown extensively in peninsular India. The crop is sown in May-August and is harvested in November-January. It is grown mostly in Madras, Bombay, and Hyderabad. Recently groundnuts have been introduced in Central Province and Chota Nagpur.

In 1947-48, the Union had 2.9 million acres of land under groundnut cultivation.

PRODUCTION OF GROUNDNUTS IN 1940-41

	Area (in 000 acres)	Yield (in 000 tons)
Madras .	3,922	1,924
Bombay .	1,580	663
C. P. .	233	65
Hyderabad .	1,686	613
Mysore ..	221	63
Total India .	8,770	3,702

Normally the principal buyers are France, Belgium, Austria, Hungary, Germany, Italy and the United Kingdom. The chief ports for export are Madras and Bombay.

Sesame seed. The cultivation of sesame in India dates further back than the Christian era. India is the largest sesame-

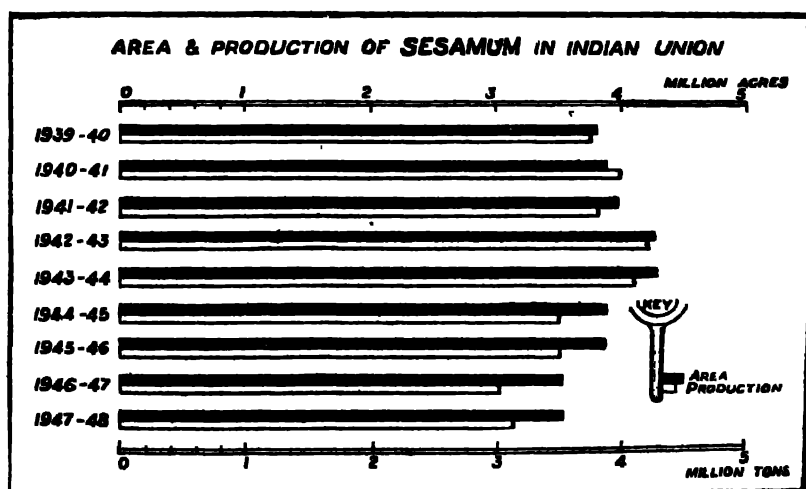


FIG. No. 93. Note the gradual decline in acreage.

producing country in the world. The United Provinces is the leading producer. In 1947-48, there were 1 million acres of land under *Sesamum* cultivation.

The plant is grown on light and sandy soils, although some of the varieties in India do well on the black cotton lands. The seeds are exported to the United Kingdom, France, Belgium, Germany, Italy and Egypt.

Castor seed. India holds a virtual monopoly in the production of the castor seed, although small quantities are also cultivated in Manchuria, Indo-China, Brazil and Java.

The castor plant requires warm climate. "A fair amount of moisture and rainfall after sowing is essential to ensure good

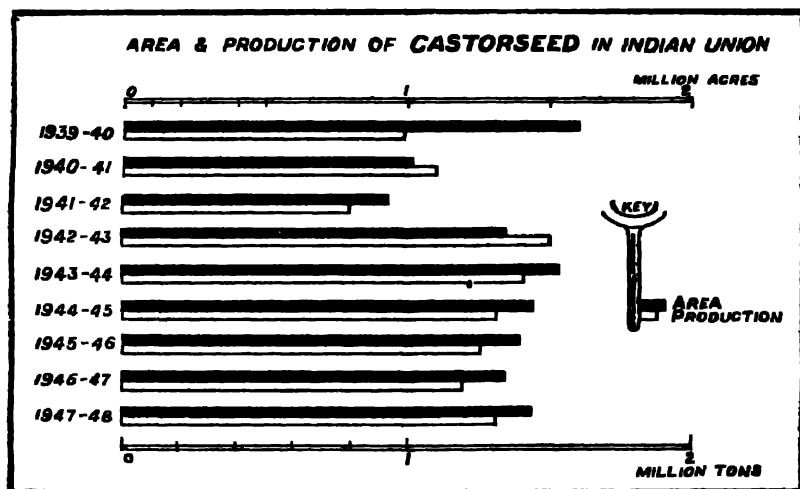


FIG No. 94. Note the sudden rise in production in 1942-43.

germination; but after the root system has developed, less moisture is needed." It does well on land where maize is cultivated. The plant acquires a height of 20 to 30 feet.

The plant is cultivated chiefly in Madras, Hyderabad, Bombay and Central Province. A little above 1 million acres of land are under castor plants in India. The principal buyers are the United Kingdom, France, the United States of America, Belgium, Italy, Germany and Spain.

Coconut and copra. Coconut is a very important source of vegetable oil. The tree is widely grown in islands and near

the sea sides of tropical lands. High temperature and heavy rainfall on alluvial lands are the ideal conditions for its growth. The tree takes 5 to 10 years to mature after which it continues bearing fruits for about 80 years. Each tree yields on an average 50 to 70 fruits per year. The chief products of the coconuts are copra and coir fibre.

Copra is the commercial name for the kernel of the coconut, broken into small pieces and dried in the sun. The kernel of the coconut contains oil, which is an important article of commerce. This oil is edible and used for cooking purposes and for the manufacture of margarine and other butter substitutes.

There are 1·5 million acres of land under coconut cultivation in India. Madras, Travancore, Cochin and Mysore account for the bulk of the coconut acreage, while Orissa, Bombay, West Bengal and Assam also contribute to it. In Madras, three-fourths of the acreage under coconut are in the districts of Malabar and South Kanara and East Godavari. In the Travancore State, the coconut tracts are found in the lowlands and the midland area. Cochin State raises the tree mostly on a narrow strip of sandy tract on the western sea board. The biggest coconut areas of the Mysore State are found in Tankur district followed by Hussan, Mysore, Chitaldrug and Kadur. In Orissa, the greatest concentration of coconut tracts is in the districts of Puri and Cuttack. The two districts of Ratnagiri and Kanara contain nine-tenths of the coconut acreage of Bombay.

The coconuts are important in India for a variety of purposes. Tender nuts are in demand for the milky fluid inside, which forms a refreshing drink. Mature nuts are used mainly for four purposes: (i) for making copra, (ii) for religious offerings, (iii) for edible purposes as fresh kernel, and (iv) for raising seedling.

About 45 per cent. of India's production of mature nuts is utilised for making copra, while an equal quantity is used also for edible purposes such as curries, chutneys, sweets, puddings etc.

Cotton seed. The importance of cotton seed as a source of oil was not fully appreciated till late in the 19th century.

The oil is used in cooking, in pharmacy, in the preparation of lard and margarine, and as a substitute for olive oil.

Bombay, the East Punjab, Central Province, Hyderabad and Madras are the chief producers. The total yield of cotton seed in 1937 was a little above 2 million tons.

Other seeds raised in India include poppy seed, mowra seed and niger seed.

Rubber. Rubber plantation was first introduced in India in 1902 on the banks of Periyar in North Travancore. The industry continued to develop till 1929 when the world-wide trade depression put a stop to further expansion. With the fall of the East Indies and Malaya—the leading rubber producing area—in 1942, the Indian rubber industry revived its activities.

Indian Union produces nearly 16,000 tons of rubber annually or just above 1 per cent of the total world output of natural rubber. Of the Indian production, not more than 50 per cent. is first grade rubber, the rest being lower grades. Rubber is mainly grown in the southern part of India. Madras, Coorg, Mysore, Travancore and Cochin are the principal producers of rubber.

P C. OF TOTAL AREA UNDER RUBBER CULTIVATION.

Madras	..	..	10 p c.	Cochin	..	..	8 p.c.
Travancore	..	..	60 p.c.	Coorg & Mysore	.	.	2 p.c.

In Southern India, communications are well developed, and there is never any scarcity of labour in the plantations. The rubber plantations employ more than 30,000 people in India.

Indian rubber is mostly raised for foreign markets. The principal recipients of Indian rubber are the U. K., Ceylon, Holland, Straits Settlements and Germany. The United Kingdom alone takes more than 35 per cent. of our rubber export. Cochin is the principal port through which rubber is exported.

The International Scheme for the regulation of production and export of rubber came into operation on the 1st June, 1934. The scheme had its aim to regulate the production and export of rubber in order to reduce existing world stocks and

maintain an equitable price level, reasonably remunerative to efficient producers.

During the Second World War, the Government of India stopped all exports of rubber and itself purchased the entire output. After the war, the rubber planters of Indian Union find themselves in sorry plight. The cost of production of Indian rubber being higher than the imported raw rubber, the Indian growers demand that there should be embargo on rubber import again.

The rubber manufacturing industry of India is capable of absorbing our entire raw rubber. But so long as the entire range of rubber goods now imported by India is not made here, embargo on import of rubber will make the manufacturing industry consume less.

IRRIGATION WORKS

As India is essentially an agricultural country, the need for a sufficient supply of water is always great. The *Monsoon* usually supplies water to Indian districts ; but there are certain drawbacks in the character of the monsoon. These are :

(i) Uncertain rainfall. In Rajputana and many parts of the East Punjab rainfall is uncertain.

(ii) Ill-distribution : In the Deccan, rainfall is not only scanty but ill-distributed.

(iii) Absence of winter rain : Cultivation in winter requires artificial water-supply in the absence of winter rain.

(iv) Certain crops require more water than rainfall can supply, viz , sugar-cane and rice.

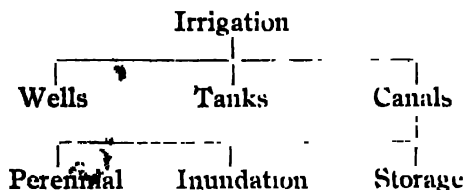
Man is unable to control rainfall in which either deficiency, irregularity or superabundance may give rise to disastrous famines. He can, however, provide measures which reduce famine. The chief among these is the extension of irrigation. Irrigation means supply of water to the fields by means of canals from rivers or from storage tanks for the purposes of agriculture.

Irrigation has played a very important part in the rural economy of the different provinces of India.

The area irrigated in Indian Union is about 50 million acres of which grain crops occupy more than 30 million acres. This

is the largest area which is irrigated in any country of the world.

There are three main kinds of irrigation works in India :



(i) **WELLS** : About 20 per cent. of the total irrigated area in India is irrigated by means of wells. The construction and maintenance of wells have been mainly the result of private enterprise. Water is raised from wells either by manual labour, bullocks, water-lifts, the Persian wheels or by means of oil engines. Well-irrigation is extensively used in the United Provinces, the East Punjab, Madras, Bombay, Rajputana, etc.

(ii) **TANKS** : Tanks are really hollows, natural or artificial, in which rain water is collected and stored up. Tank irrigation is prevalent in Madras, Mysore and Hyderabad.

(iii) **CANALS** : This is the most important type of irrigation in India. Canals may draw their water either from rivers or from artificial storage. Canals are mostly constructed in Northern India, where the rivers have flow of water throughout the year. Storage canals are constructed in the Deccan, Central Province and Bundelkhand. Here the rivers dry up during the hot season and, therefore, artificial storage is necessary. Rain water is stored across a valley by building a dam and then distributed to the neighbouring lands by means of canals.

River canals may be of two classes : (a) Inundation canals and (b) Perennial canals. The inundation canals obtain water when the river rises above a certain level. Thus the canals depend for their supply of water on the natural flood level of the river. When the level is low, canals do not obtain water, but when the river is in flood, they permit widespread cultivation. Irrigation is thus suspended from October to April when the level of the water is low. During this period cultivation is

practised with the help of well-irrigation. To remedy this defect perennial canals are constructed.

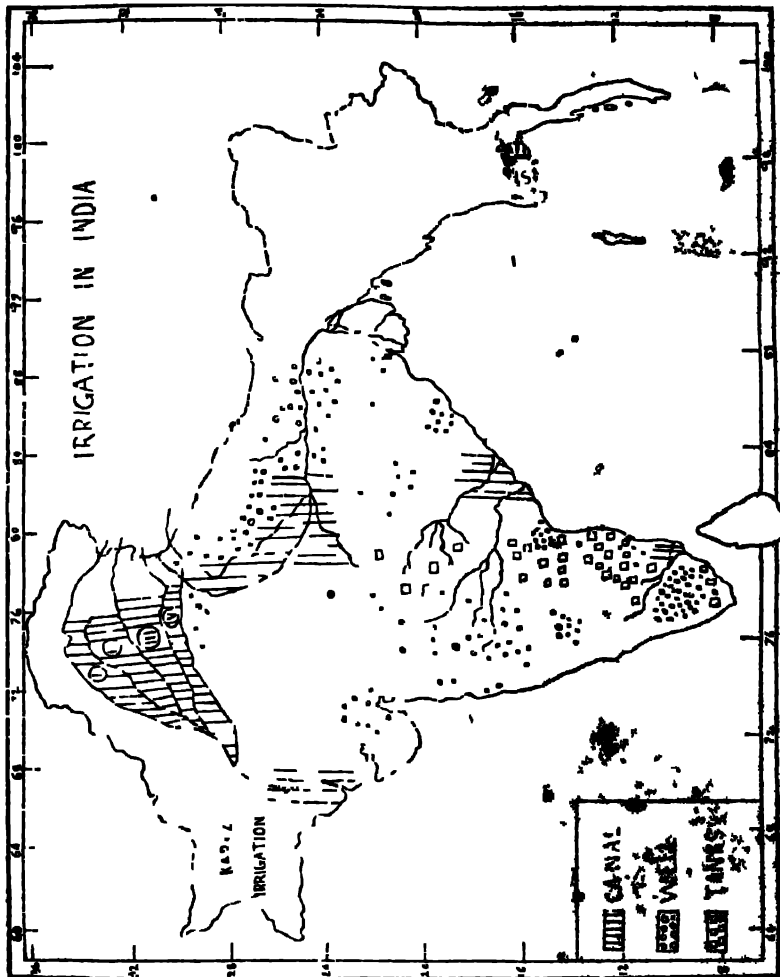


FIG No 95 In divided India nearly 60 million acres of land were cultivated with the help of irrigation. Notice the irrigation development in the areas of uncertain and scanty rainfall.

The perennial canals draw their water from rivers which have their flow of water throughout the year. Some form of barrage is put across a river and its water is diverted by means of canals to the neighbouring areas. The great canal systems

of the U. P. are of this type. Many of the inundation canals are being transformed now into perennial canals. By perennial irrigation, agricultural production in the "uncertain zone of rainfall" has been enormously increased, for unlike the inundation method it allows full advantage to be taken of in the hot season and so permits cultivation all the year round.

The conditions are excellent for developing irrigation in the East Punjab. The province is flat, with soft alluvial soil. The development of canal irrigation has transformed large areas of semi-deserts into fertile agricultural lands.

The important canal systems in the East Punjab are :

(i) The Western Jumna Canal takes its water from the Jumna river and irrigates the districts of Rohtak and Hissar (South-East) and the States of Patiala and Jhind. More than 8,90,000 acres of land are irrigated by 1900 channels of the Canal.

(ii) Sirhind Canal takes its water from the Sutlej river at Ruper and irrigates the districts of Ludhiana, Ferozepur and Hissar, and Nabha. The canal was opened in 1862.

(iii) The Upper Bari Doab Canal takes its water from the Rabi river at Madhopur and irrigates the districts of Gurudaspur and Amritsar. This canal is extended to Pakistan.

In Madras about 7 million acres of land are irrigated by tank-canals. The percentage of the area irrigated to the total area sown in Madras exceeds 30. Canals take their water from the Godavari, Kistna and Cauvery. The Periyar canal system is one of the best examples of irrigation that exists in Southern India. The flat land around Madura covering an area of 1,33,000 acres, is watered by the Periyar river.* The Mattur irrigation system on the Cauvery river is the biggest in the Union and "the largest single block masonry reservoir in the world with a storage capacity of 93,500 million cubic feet."

The prosperity of the United Provinces is largely due to the great irrigation works. Irrigated regions cover nearly 22 per cent. of the area sown. Rainfall in the Upper Ganges valley is under 40 inches and irrigation is of vital importance. There are five large canal systems in the province.

* The Periyar is a small river in the Western Ghats of the Madras Presidency whose water is drawn to the eastern part of the hills by means of a tunnel.

(i) The Upper Ganges Canal was completed in 1854 and has its head water at Hardwar. It irrigates over 1,00,000 acres of land and is the most important system of the province. The main canal is 213 miles long with branches and distributaries totalling 3,400 miles. It also supplies water to the Agra canal and the Lower Ganges canal.

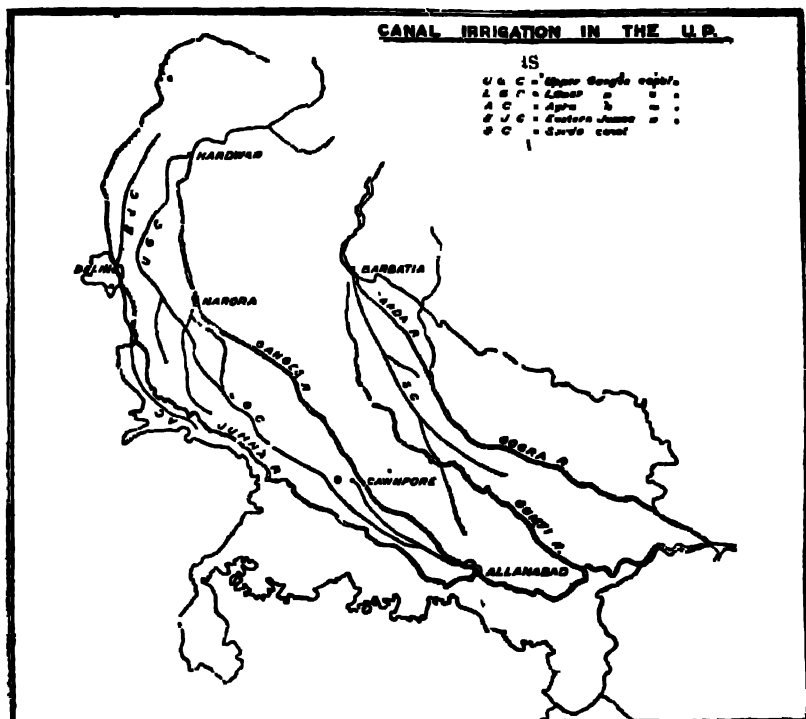


FIG No. 96 Note the absence of irrigation in the south west of U P

(ii) The Agra Canal was opened in 1874 and is taken off from the Jumna near Delhi. It irrigates over 2,60,000 acres of land.

(iii) The Lower Ganges Canal was completed in 1878. It is taken off at Narora in the district of Bulandshahr. The total length including channels exceeds 3,000 miles. It irrigates over 8,00,000 acres of land.

(iv) The Sarda Canal is the largest productive canal of the province. It was completed in 1928. Its mileage including

distributaries is over 5,500. The head works are situated at Banbansa on the border of Nepal. It irrigates Rohilkhand and the western part of Oudh. The Sarla system commands an area of about 60,00,000 acres of land.

(v) The Eastern Jumna Canal serves the north-eastern part of the province. The canal takes the water from the Jumna near Faizabad.

The progress of irrigation in India is not rapid. Irrigated areas cover only 18% of the total sown area in India. There is great scope for irrigation in West Bengal, Bihar, Orissa and southern United Provinces.

In West Bengal, only about 2,75,000 acres are irrigated by canals out of the total cropped area of 16,000 square miles. The need for irrigation facilities is urgent as at many places in the districts of Birbhum, Bankura, Burdwan and Midnapore, the rainfall is much below the quantity required for cultivation.

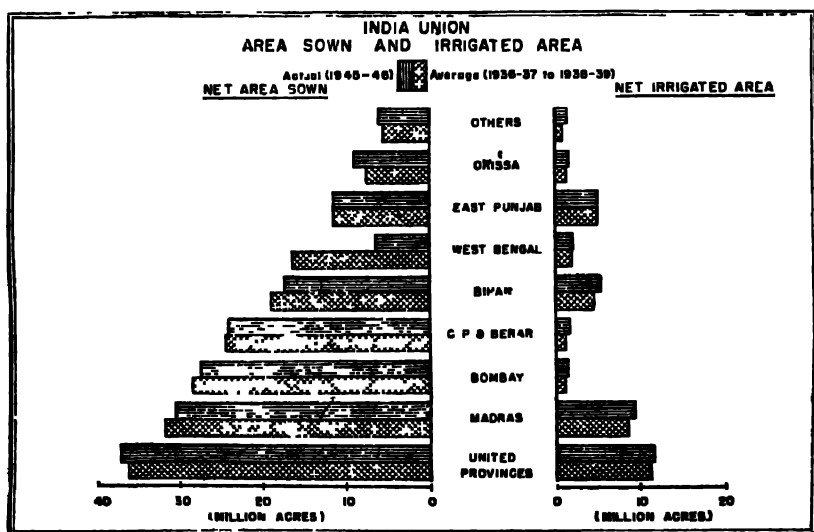


FIG. No 97. Note the importance of irrigation in U.P.

		P c of irrigated area to cultivated area	P c. of irrigated area to total area
Madras	...	26	12
U. P.	...	27	18
Bombay	...	4	12
Bihar	...	22	12

As extension of canal system involves heavy cost for construction, its development will depend on the Government policy and the state of finances.

The Multi-purpose Projects.

Although India leads the world in irrigation, there is urgent need for further extension of irrigation facilities to many areas to step up production of food which has of late fallen below requirements. It has been estimated that out of the total quantity of water available in the rivers of the country and the sub-soils only six per cent has so far been utilised for irrigation and the rest runs to waste and in its progress to the sea does incalculable damage to life and property through uncontrolled floods.

Recently several projects have been undertaken by the Central and Provincial Governments for power and irrigation in India. *The projects are being so designed as to provide not only for irrigation, but also for hydro-electric power, flood control, navigation, recreation facilities and fish culture. Hence these projects are also known as multi-purpose plans.* After the completion of these plans, India will be using about 10 p.c. of her latent water-power capacity, and about 28 million acres of land will become available for cultivation.

For the purpose of planned development, India can be divided into the following river basins :

- (i) The river-system of East Punjab which was formerly part of the Great Indus basin.
- (ii) The Central Ganges basin between its source and the eastern borders of the United Provinces.
- (iii) The Eastern Ganges basin drained mostly by its northern tributaries.
- (iv) The Brahmaputra system of Northern Assam.
- (v) The Hooghly basin which comprises parts of Eastern Bihar and almost the whole of Western Bengal.
- (vi) The Orissa river system bounded on the North by the water shed of the Subarnarekha and on the South by the Mahanadi.

- (vii) The Godavari system with its tributaries draining into the Bay of Bengal.
- (viii) The Krishna system which covers some of the dry districts of Central and Eastern Madras.
- (ix) The Cauvery System.
- (x) The Central Indian river system of the Tapi and Nerbada.
- (xi) The Malwa river system skirting the Eastern borders of Rajputana and centring round the Chambal which drains to the Jumna.

For the development of some of these rivers valleys, the Central Government have in hand the following multipurpose projects :—

- (a) The Damodar Valley Project (of the Hooghly basin).
- (b) The Koshi Project (of the Eastern Ganges basin)
- (c) The Hirakud Project (of the Orissa river system).
- (d) The Tapi-Nerbada Project (of Central India).
- (e) The Rihand Project.
- (f) The Tungabhadra Project.

The estimated cost of the six projects is Rs. 232 crores and will irrigate 12 million acres of land.

These projects will not only provide irrigation and generation of electric power for industrial purposes, but will also control flood and malaria, navigation, land reclamation, fish culture, etc.

In addition, there are provincial projects like Mor river (West Bengal), Ramapadasagar (Madras), the Bhakra and Nangal projects of the East Punjab. The Mor river project of Bengal will take about 4 years to complete and will bring irrigation to 600,000 acres. The Ramapada Project aims at irrigating 2.5 million acres of land.

Damodar Valley Project

The Damodar (also known as the River of Sorrows) is 336 miles long. It takes its source at the hills of Chotanagpur at an elevation of 2,000 feet. After flowing for 180 miles in Bihar it enters West Bengal and ultimately joins the Hooghly.

In its upper valley lies parts of Hazaribagh, Palamau, Ranchi, Manbhum and Santal Parganas in Bihar. Here the rainfall is about 47 inches annually, most of which fall during the monsoon. "Torrential rains crash down upon the deforested hills, and the unimpeded rain-water tumbles down the hills into the river. The unchecked flow erodes land in Chota Nagpur and swells the volume of water in the river."

The lower portion of the valley lies in West Bengal, where the flooded Damodar overflows its bank, destroys crops and dwellings, carries away men and cattle, disrupts communications and dislocates temporarily the economic life of the valley.

The river can be made to work for multi-purpose development. If properly tamed, it can become a source of wealth and power to Bihar and West Bengal.

The Damodar valley project aims at providing water for irrigation and navigation, controlling malaria, introducing scientific management of land and promoting actively the economic development of the entire basin. The project will provide perennial irrigation to three quarters of a million acres and generate 300,000 kw. of power.

The upper Damodar basin is very rich in timber, lac and tussore. The lower basin though very fertile is without proper system of irrigation for which intensive cultivation is not possible. The Damodar Valley contains the largest coal deposits of India and considerable quantities of bauxite and aluminium. The valley has also fire clay, china clay, mica, limestone, lead, silver, antimony and quartz. With cheap electric power, these minerals can be properly exploited.

The Government of India has set up by an Act a Corporation to implement the Damodar Valley Project. The Damodar Valley Corporation will execute and operate schemes for irrigation, the generation of power and flood control. The Corporation will also provide navigation, afforestation, public health and industrial, economic and the general well-being of the people of the Valley. The construction work has commenced.

The Hirakud Dam Project comprises the construction of a dam across the Mahanadi about nine miles upstream off the town of Sambalpur. There will be canals on either side and two hydro-electric installations. The Hirakud dam will be 150

feet above river bed with gross storage capacity of the reservoir 5.3 million acre feet. Two other dams will be constructed on

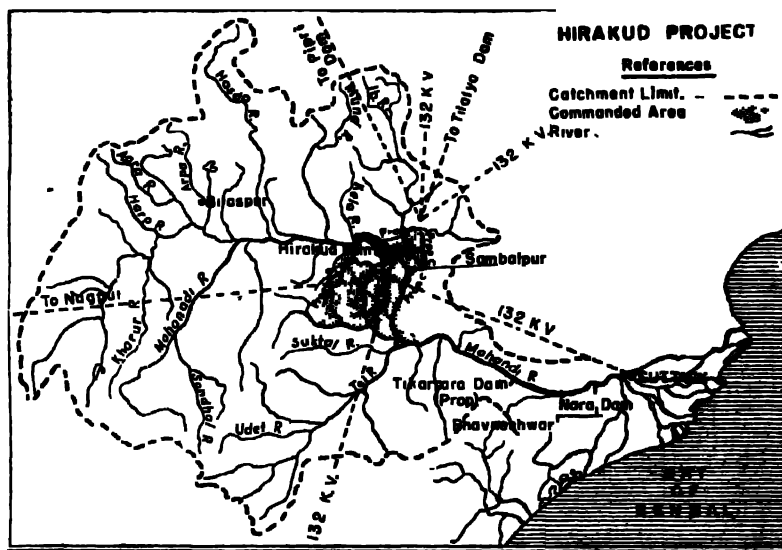


FIG No 98 Note the location of dams on the Mahanadi.

the Mahanadi—one at Tikarpura and the other at Naraj a few miles west of Cuttack. The three projects when completed, will provide irrigation to 2,500,000 acres of land, generate 3,50,000 Kw and will also provide navigation facilities. The whole of the Mahanadi Valley, particularly Sambalpur district, Sonepur State and the delta region will be particularly benefited by these schemes.

The Kosi Project is the most important scheme in Bihar. It will be a multi-purpose project for irrigation, power, navigation, flood control, silt control, soil conservation, drainage, reclamation of water-logged areas, malaria control, fish culture and recreation facilities. The project will comprise a dam about 750 feet high across the Chatra Gorge in Nepal to store about 11 million acre feet of water. There will be two barrages on the Kosi.—(a) The first one in Nepal will control and stabilise the river channel and will divert its supplies into two canals on either side. About a million acres of land in Nepal territory will be irrigated by these two canals. (b) The second barrage

will be near the Nepal-Bihar border, where two canals on the left and one on the right will be constructed for irrigating over

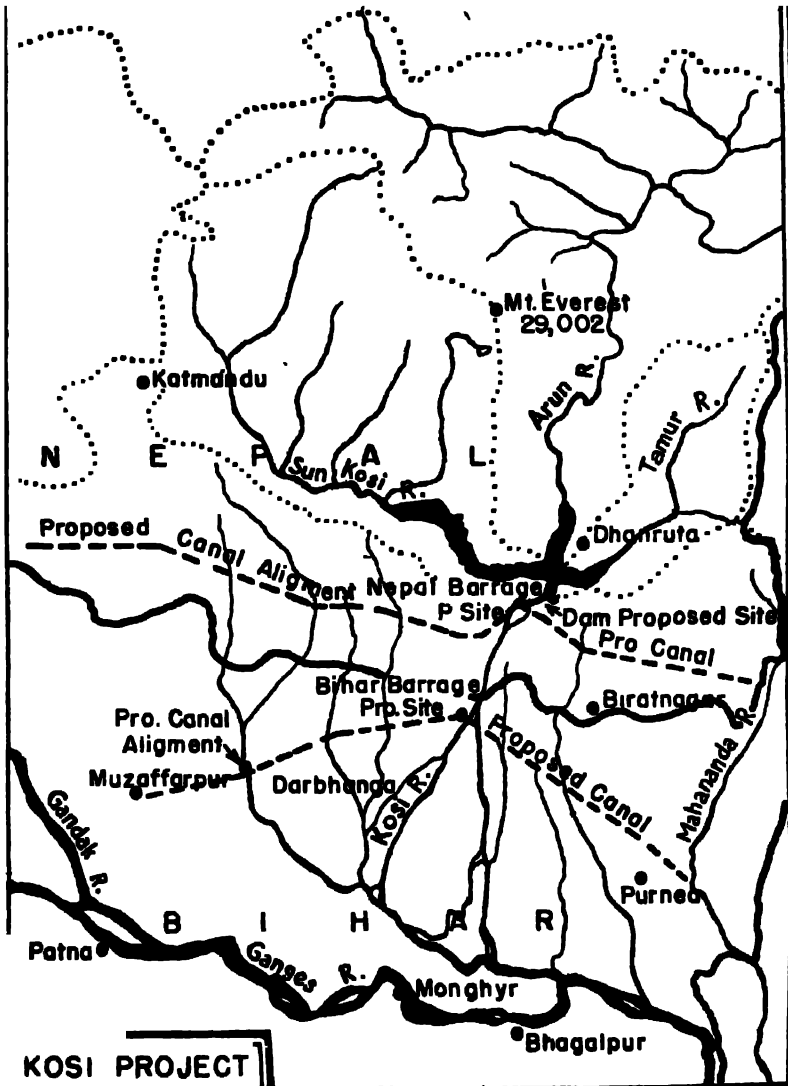


FIG. No. 99. The project will serve northern Bihar

two million acres in the districts of Purnea, Darbhanga and Muzaffarpur in Bihar.

The power plant at the dam site will be capable of generating 1·8 millions Kw of cheap power. The project may take ten years to complete and the cost is estimated at Rs. 90 crores.

The Tungabhadra Project comprises the construction of a dam 8,200 feet long and 160 feet high across the Tungabhadra, a major tributary of the Krishna. The reservoir will contain 2·6 million acre feet of water and will serve Madras and Hyderabad. About 300,000 acres of land will be irrigated by the scheme. The Project will also develop a small quantity of hydro-electric power in Madras.

The Bhakra and Nangal Project is the only multipurpose scheme in East Punjab. The essential feature of the Bhakra project is the construction of a cement and concrete dam, 689 ft. high, across the River Sutlej at the site of Bhakra Gorge, about 50 miles upstream of the present headworks of the Sirhind canal in East Punjab. The total stoppage capacity of the reservoir is estimated to be 7·2m cubic ft. of which nearly 5·5m cubic ft. will be available for hydro-electric power generation and irrigation purposes every year. According to the latest design the reservoir level has been kept at 1,680 ft. above sea level. The dam would have an overall height of about 680 ft. and would rank as the highest straight gravity dam in the world.

Stored waters would provide irrigation facilities for nearly 6·6m acres of land and generate about 230,000 kilowatts of electric energy. An additional 170,000 kilowatts would be produced on the Nangal hydro-electric canal which forms a feeder channel for the Bhakra canal system.

The length of the dam at the top will be about 1,700 ft. and the width of the base at its widest point about 1,100 ft. A 30 ft. roadway will be provided at the top.

During construction of the dam the river will be diverted through two 50 ft. diameter diversion tunnels, one on the right and the other on the left, going through hillsides. Each tunnel will be about a half-mile long.

The Nangal scheme provides for an auxiliary dam or barrage across the river at Nangal, about eight miles downstream from Bhakra, which will divert the river into the Nangal hydro-electric canal and at the same time serve as a balancing reservoir for taking up daily fluctuations from the Bhakra dam

and for meeting daily and weekly load variations on power houses on the Nangal hydro-electric canal. The Nangal dam will be a massive concrete weir 1,029 ft. long, 400 ft. wide and with its deepest foundation going down to 50 ft. below the river bed. The waterway will consist of 28 bays 30 ft. wide, each provided with a steel gate which will head up the water about 50 ft. above the existing river bed.

The Rihand Valley Project is by far the most important multi-purpose scheme in Western U. P. The dam at Pipri, on the river Rihand which is a tributary of the Sone will be largest reservoir in India. The dam will be over 3000 feet long, and the storage capacity of the reservoir will be 90 lakh acre feet. The surface area of the lake created will be 180 square miles.

The scheme will confer numerous benefits on the country.

- (a) The East U. P. will have over a thousand tube wells and two thousand miles of pumped canals for irrigation in million acres of land. Thus, large tracts of unbroken land will be cultivated for food production.
- (b) Fish culture will be possible in the huge lake.
- (c) The canals will bring the unexplored region of the Sone valley in touch with the Ganges. Large cargo vessels will ply between the Hoogly and the Rihand.
- (d) The industrialisation will take place in the wake of the Project. The region is one of the richest in mineral wealth.
- (e) Some sections of the E. I. Rly. can be electrified to save coal. The power raised from the water will result in the saving of 20,000 wagons of coal per year.

Other benefits of the scheme will be control of flood in the Rihand and the Sone, lesser soil erosion in the Rihand valley, better afforestation in Rewa and restoration of marginal lands.

FORESTS AND THEIR PRODUCTS

India is very rich in forests which cover more than $\frac{1}{6}$ of the total area of the country. Throughout this vast forest

area there is a variety in the types of forest vegetations, depending on variations of climate and soil and on the other local factors.

AREAS OF FOREST LANDS BEFORE PARTITION

Province	Area of Province Sq. miles	Forest area Sq. miles	P C of forest area to area of the Pro- vince as a whole
Madras	125,163	15,245	12.2
Bombay	76,127	12,998	17.1
Sind	47,138	1,157	2.5
Bengal	76,960	10,803	14.0
U. P.	106,014	5,251	4.9
Punjab	95,315	4,842	5.1
Bihar	69,257	1,786	2.6
Orissa	32,179	1,985	6.2
C. P.	98,445	19,413	19.7
Assam	55,445	21,393	38.6
Beluchistan	46,974	813	1.7
Ajmer	2,767	142	5.1
Coorg	1,593	839	52.7

With the division of the country, Indian Union has now 74 million acres of land under forests.

Broadly speaking, there are five types of forests in Indian Union.

(1) Arid country forests, extending over a considerable portion of Rajputana and the south of the Punjab. The most important tree is the babul.

(2) Deciduous forests extend over large areas in the sub-Himalayan tract, and in the Peninsular India. Sal, teak and a great variety of other valuable trees are found in these areas.

(3) Evergreen forests occur in those areas where the rainfall is heavy. Such regions are the west coast of the Peninsula, and the Eastern sub-Himalayan tract. The trees are bamboo, palm, fern and India rubber.

(4) Hill forests. They vary according to elevation and rainfall. In the Eastern Himalayas and Assam the forests are full of oak and magnolia. In Assam pine trees grow abundantly at an elevation of 3,000 to 6,000 ft. Deodar, pine and oak occur in the North-Western Himalayas.

(5) Littoral forests occur on the sea coasts and along tidal creeks. The most characteristic trees belong to the mangrove family. •

Indian forests provide employment to a large number of people such as wood-cutters, sawyers, carters, carriers and raftsmen.

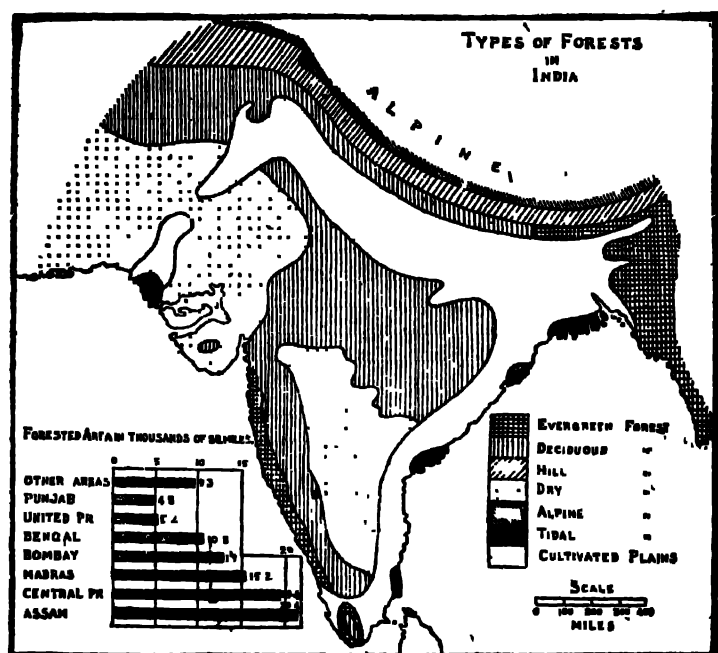


FIG NO. 100. Map showing the different types of forests in India and Pakistan.

Indian forests play an important part as suppliers of raw-materials for various industries. The forest produce is divided into two main heads: (1) major produce, i.e., timber and fire wood and (2) minor produce, i.e., comprising all other products such as lac, tanning materials, essential oils, turpentine and resin. Paper industry is dependent on bamboos for the manufacture of paper pulp. Match-making industry also depends on the forest produce.

Forests are replaceable, but at a slow rate. So the use of forests as a source of fuel is not desirable. Forests should be reserved for other and more profitable purposes. Wood should

be altogether left out as a source of power supply, whether as an alternative or as a supplement to coal or electrical energy."

The annual production of timber in India is 220 million cubic feet. Important timbers include deodar, sal, rose-wood, padauk, Indian mahogany and teak.

Lac is secreted by a type of insects which feed on the saps of certain trees. These trees are abundant in Bihar, C. P., Bengal, Assam, U. P., Orissa and the Punjab. Chota Nagpur in Bihar raises 60 p.c. of India's total. Only 2 p.c. of the production is consumed in India, and the rest is sent outside.

THE CONSUMPTION OF LAC

Gramophone Record	..	..	35 p c.
Polish and Varnish	..	..	20 "
Electrical Insulation	..	...	15 "
Hat Stiffening	...	...	10 "
Ceiling Wax	...	..	5 "
Lithographic Ink and others	...	...	15 "

India enjoys a practical monopoly of lac trade. Best customers of Indian lac are the U. S. A. and U. K. About 98 p.c. of the total lac export is handled by Calcutta.

Resin is derived from the pines of the Himalayas and Assam hills and is worked for making resin and turpentine oil. Resin is used for shellac adulteration, in paper mills, soap factories, etc., while turpentine has demand for medicine and varnish.

Myrobalans grow in abundance in Madras, Bombay, West Bengal, Chota Nagpur, Orissa and other places. A variety is found in Coimbatore whose fruits are very small in size, but the tree is taller than the *pipul* tree of our country. The fruits, the bark, the leaves, the trunk—every part of the myrobalans has some use or other for us. The timber is very strong. The Jubbulpore myrobalan is the best of all and is used for the preparation of medicine and dyes. *Myrobalan is a great toner in tanning.* The alkali of myrobalans is useful for preparing different dyes by mixing various ingredients. In Madras myrobalans are extensively used for dyeing cotton, wool and skin. In Assam, *endi* and *Muga* silk are dyed with myrobalan alkali. England, Germany, Belgium, China, Japan, the U.S.A. and Australia are the chief importers of Indian myrobalans.

In recent years, the forest products have assumed great importance as raw materials for medicinal and perfumery purposes. Sandal wood oil, palmarosa (from Rosha grass), linalol, and vetivert are important essential oils. Margosa (Neem) oil is regarded in India as a specific for skin diseases and is used in soaps. Drug-plants are also exploited in India and these include Atropa, Belladonna, Hyoscyamus, Podophyllumemodi, Nux Vomica, and Artemisia brevifolia. Other drugs include Aconite, mentha, juniper etc.

The Forest Research Institute at Dehra Dun is engaged in (a) finding out suitable woods for aircraft construction, (b) producing cheap printing paper, (c) discovering indigenous woods suitable for use as battery separators, etc.

The question of bringing timber and other materials from forests to the road, railway or river that leads to the place of utilisation, is the main problem of the forest industry. At present two methods are applied: (i) employment of bullocks, buffaloes and elephants as carriers of forest produce, and (ii) timber rafts are floated down to the rivers during monsoon months to be dragged again from the water (after, of course, many days of floating) at the saw mills.

Some important commercial timbers

BAING (*Tectameles nudiflora*) from Assam is a white soft wood

BENTEAK from the West coast is a reddish brown moderately hardwood and has considerable demand for furniture, coffee cases, ship-building, etc.

BIJASAL, obtainable in Bombay, Madras and Bihar is a very hard, close-grained durable wood and is used for door and window frames, furniture and agricultural implements.

BLUE PINE (*Pinus excelsa*) from the East Punjab is much used in constructional work.

DEODAR (*Cedrus Deodara*) is a moderately hard wood, strongly scented and oily and is used for railway sleepers and in building.

DHUPA found along the foot of the Western Ghats, besides giving the gum resin, is used for tea chests and packing cases.

HALDU (*Adina cardifolia*) is found all over India. It is a yellow, moderately hard, even-grained wood and is used for furniture and cigar box making.

INDIAN ROSE WOOD is world famous and is found mostly in the forests of the southern part of the Western Ghats, although it is also available in C. P. and Orissa. Extremely hard and close-grained, this dark purple wood is the highest priced timber in India and is widely used for furniture making.

SHISHAM otherwise known as *Sisso* is available in United Provinces, East Punjab and West Bengal. This wood is very hard, close-grained and brown in colour and takes a high polish. It is much used for carriage, cart and boat-building all over the Northern India.

IRUL WOOD and **MESUA** (*Mesua ferra*) are found in Madras. Being very durable, they make excellent railway sleepers. Mesua is also available in Assam.

SAL (*Shorea robusta*) is in regular demand in Northern India for building piles, beams, planking, door and window posts and for railway sleepers. This timber is available in Assam, West Bengal, Bihar, Central Provinces, Orissa and the United Provinces.

SANDALWOOD comes from the dry regions of South India and is a hard, close grained yellowish brown wood, strongly scented by the oil characteristic of the tree. It is in demand for making boxes and small articles, often beautifully carved. The oil of the wood is also important.

SEMUL (*Bombax Malabaricum*) is found widely in Assam, Bihar and Madras. The timber is soft and white and is used for toys, packing cases and planking.

SUNDRI (*Heritiera Species*), available in West Bengal, is used for boat-building, furniture, beams, planking and posts. The wood is very tough and hard.

TEAK (*Tectonia Grandis*) is extensively found in Central Provinces, Madras and Bombay. As a ship-building wood and for good house carpentry, it has long been known in many parts of the world. In India it is a general purpose timber for house and ship-building, bridges, railway sleepers, furniture etc.

LIVE STOCK AND THEIR PRODUCTS

Though of poor quality, a large number of livestock is maintained in India.

NUMBER OF LIVE STOCK POPULATION IN INDIAN UNION

(In million)

Cows	..	..	..	61	Horses	..	..	..	1.5
Buffaloes	..	..	..	28	Mules	.	..	..	1.5
Sheep	..	..	..	40	Camels	.	..	..	.9
Goats	..	..	..	50					

The world's cattle population, according to a recent estimate, comes to about 690 million animals. Cattle in *undivided India* were estimated at 215 millions. Thus India leads the world in cattle production. Cattle are used for ploughing and for milk. "Without them the fields remain unploughed, store and bin stand empty, and food and drink lose half their savour, for in a vegetarian country what can be worse than to have no milk, butter or ghee?" The cattle in India however are ill-fed and irregularly distributed. In many parts of India, sufficient grass is not grown, and therefore, it is necessary to raise fodder crops. In Northern India due to overwhelming importance of agriculture almost every cultivable land is occupied and thus grazing grounds are few in number. The important cattle-breeding areas are the northern Gujrat, Central India, Nellore district, the U. P., Mysore and Bombay.

It is estimated that not less than 40 million sheep are kept in India. Sheep industry is in the hands of people who are ignorant of the trend of modern development. Sheep in India are reared particularly in the Hissar district of the Punjab; Garhwal, Almora and Nainital in the U. P.; Kathiawar, Gujrat, Mysore; and the Bellary, Karnool and Coimbatore districts of the Madras Presidency. The Indian sheep is inferior to that of Australia or S. Africa as mutton or wool producer. The wool of Northern India is white and of fair quality while in the Peninsular India, it is grey, short and coarse. The average annual production is little above 55 million lbs. "A good deal of the wool, which comes into the Indian market is dead wool, i.e., that has been removed from the carcasses of slaughtered sheep and not shorn." The wool produced in India is largely

consumed for village handicraft and manufacture of coarse blankets, although a small portion is exported. The average annual export of raw wool is about 42 million lbs. A frequent complaint of the foreign consumers of Indian wool is the presence of excessive foreign matter such as sand, burrs etc. It is, therefore, desirable that wool should be properly washed and graded before export.

Goats may be considered as the poor man's cheap milk animal. Goat's milk is highly valued for human consumption, but the yield of milk from goats is very small. There are over 50 million goats in India. These animals are valued for their meat and milk and in places for their hair. Goats are very prolific and they are easily domesticated. Mules and horses are used in India mostly for drawing carts. There are 3 million such animals in India and these are found chiefly in the Punjab, U. P., and Bombay. Camels are mostly confined to the East Punjab, and Western Rajputana. In these areas camels are largely used for ploughing and as draught animals.

Animal products in India are hides and skins, bones, wool, milk, butter and ghee. Hides and skins are used for making harnesses, bags, suitcases, trunks, machine belts, automobile tops and seats, cases for guns, shoes and gloves. The term hides denotes the skins of cattle, horses and camels while the term skins is restricted to those of calves, sheep and goats. In India the hides and skins are mostly collected from the slaughter houses and the average production is about 50,000 tons of which nearly 30,000 tons are exported. The leather centres in India are Cawnpore, Agra, Calcutta, Delhi and Madras.

Indian hides and skins are purchased by the U.S.A., Germany, U. K., France, etc.

The total output of milk in India is as large as 700 million maunds. "Compared with other countries India stands second in the volume of milk production, her output being exceeded only by the U.S.A. She produces over four times the output of Great Britain, over five times that of Denmark, over six times that of Australia and over seven times that of New Zealand."*

* Report on the Development of the Cattle and Dairy industries of India by N. Right.

ESTIMATED TOTAL PRODUCTION OF MILK
(in million gallons)

• **Total production of Milk 1930-34**

U. S. A.	..	..	10,380	Poland	..	..	1,900
India	..	..	6,400	Denmark	..	..	1,200
Germany	..	..	5,096	U. K.	..	..	1,474
France	..	..	3,150	Canada	..	..	1,580

Undivided India was thus the second leading milk producer in the world. Per capita production was only 8 ounces being the lowest in the world. In the Indian Union, the per capita production is still lower as the higher yield mostly comes from Pakistan.

**ESTIMATED TOTAL PRODUCTION OF MILK IN THE
IMPORTANT PROVINCES**

				<i>Mds. (lakhs)</i>
Central Provinces	..	...	...	82·5
U. P.	.	...	...	1101·5
Bihar	..	.	...	559·18
Orissa	...	...	...	48·89
Assam	..	...	...	27·8
Bombay	...	...	...	182·66
Madras	...	...	..	465·19

The two important products of milk are butter and ghee. *The production of butter from milk has increased in recent years with the development of dairy farming.* The centres of this industry are Agra, Aligarh, Bombay and Calcutta. Practically the entire production is consumed in the country.

Ghee has considerable demand in India and is "prepared by practically every household by heating butter over a slow fire until an oil is formed that rises to the surface while the refuse settles down as sediment." Ghee is used in the preparation of food and sweetmeats. Buffalo butter gives greater yield of ghee than that of cow. The ghee-producing areas are the U. P., Rajputana, Central India and the East Punjab. The annual production of ghee in India is about 14 million maunds.

The seasonal variation in the quality of ghee is always noticeable. The best ghee is produced during the winter while

the ghee produced in the rainy season is of inferior quality. Cheaper and inferior fats are often mixed with ghee.

Of the total ghee production, nearly 30 per cent is retained by the producers for domestic consumption and the rest is marketed. Ghee is also sent to the Strait Settlements, Malaya States, Ceylon, South Africa, Mauritius and Hong-Kong where a large number of Indian emigrants have settled. India also imports in normal years about 66,000 maunds of ghee, mostly from Nepal.

Recently the ghee trade has suffered greatly by the competition of vegetable oils. The establishment of ghee grading centres is necessary for getting ghee graded and tested for purity.

Poultry. The importance of poultry in India may be judged from the fact that, domestic consumption apart, it is estimated that 60 per cent. of hen-eggs and 80 per cent. of duck-eggs are sold every year to the value of over Rs. 5 crores, the value of birds themselves being estimated at Rs. 7½ crores. The per capita consumption of eggs per annum is 296 in Canada, 154 in Great Britain and 8 in India. This is because the people in India are vegetarians. India exports dried and liquid eggs outside.

THE FISHERIES

The importance of fishing lies in the immense potentiality of that article in the food resources of this country. Notwithstanding the prevalence of vegetarianism, a large number of every caste and creed in India are accustomed to use fish in their daily diet.*

The chief sources of supply are the coastal margins of the sea, river estuaries, and back waters for marine and estuarine fish, and rivers, canals, tanks, inundated tracts etc. for fresh water fish.

The maritime and riverine fisheries at present occupy a very minor place in the national economy of India.

The fishing areas of India may be divided as follows:—
(a) Sea fisheries, (b) Deltaic fisheries and (c) River fisheries.

The sea-fisheries are confined to the coastal waters from 5 to 7 miles from the shore in Guzrat, Canara, Malabar Coast, Gulf of Mannar, Madras Coast and the Coromondal Coast.

* National Planning Committee—Fisheries.

"Most varieties of fish caught along the coasts are edible." The catches are prawns, Jew fish, Indian salmon, mullets, cat-fish, pomfret, seer, sardine, mackerel, flying-fish, rays, etc. These varieties are caught on a limited scale as there is little demand for sea-fish in the rural areas. The type of fishing implements includes drift nets, cast nets, stationary nets, etc. In the sea fishermen catch fish very near the shore and do not go beyond a distance of 5 to 7 miles.

The estuaries of the Mahanadi, the Ganges and the Brahmaputra stretching from Puri to Hooghly contain cock-up, hilsa, pomfrets, prawns, catla, cat-fishes, rohu, etc., which are caught by trawl type nets, drift nets and gilling nets, casting nets, bag nets, etc.

Fishing in the Indus and the Ganges systems is very important. In these parts, people always prefer freshwater fish.

The great problem that lies in the way of developing fishing industry in India is that people are greatly accustomed to the consumption of certain varieties of fish and these only. Wide publicity and propaganda are necessary to enlighten the people as regards the nutritious value of fish not consumed at present.

The average *per capita* consumption of fish in India is 3 lbs. per annum, West Bengal being the leading consumer having 6 lbs. per capita consumption. In the East Punjab, it is 0.9 lbs. and in Bihar 2 lbs.

One half of the total production is consumed as fresh fish : one-fifth is cured by salting, another one-fifth is simply sun-dried, while about 10 p.c. is converted into fish fertilizers.

Present position in Madras, Bombay and Bengal. Madras with a coastline of 1,750 miles makes a fishing ground in the shallow water area of 40,000 square miles. The fishing population is very large, but the methods are very primitive. Drifters and trawlers are never used. Country boats are engaged in catching sardine, mackerel, Jew fish, ribbon fish, etc., in the shallow waters around Ganjam, Gopalpur, Vizagapatam, Cocanada, Masulipattam, Nellore, Madras, Pondicherry and Nagapatam in the east coast and Calicut and Bangalore on the west coast. Deep sea fisheries are practically absent in Madras.

Fish is considered as an important item in food for daily use in Bengal, and many people depend on fishing industry in

craft, a fair weather season lasting for some seven months, and a fishing population more alive to their opportunities and more daring than those of the sister presidencies."

In India fish is preserved by desiccation with or without salt and by the use of antiseptic preservatives such as brine, vinegar, etc. The fishermen in India practise desiccation by drying fish in the sun as the process is simple and handy. During the monsoon when sun drying is difficult, salt is used. *Canning** is the best method applied for preserving sardines, mackerel and prawns and is practised on a limited scale in Madras and Bombay

In order to develop the fishing industry in India, it is necessary to make, first of all, provision for cold storage facilities in every fishing port. Several Provincial Governments have undertaken surveys of the fishing grounds to ascertain what kinds and quantities of fish are available, and to find out how best these can be exploited.

Certain industrial products are also obtained from fish in India. These are fish-oil, fish-meal, fish-manure, fish-maws and shark-fins

Commercially very valuable fishing consists of pearl fishing. The waters of the gulf dividing Indian Union from Ceylon and of the Arabian Sea near the edge of the Kathiawar peninsula, as well as in the Gulf of Cutch, are rich in oyster beds, yielding highly valuable pearls.†

MINERAL RESOURCES

Nature has been very kind to India in the endowment of mineral resources. In recent years much progress has been made in the survey of mineralised areas, and many new mining regions are being found out. The value of the minerals found in India in 1938 exceeded Rs. 34 crores.

Of the various minerals found in India, the most important are coal, manganese ore, gold, mica, iron ore, and salt. She is the world's main source of supply of ilmenite, monazite and zircon.

* The fish are beheaded and thoroughly washed after which these are put in saturated brine and then dried. In the last stage, these fish are packed in cans filled with oil.

† National Planning Committee - *Fisheries*.

The mineral resources of Indian Union encompass a sufficient range of useful products that are required to make a country industrially self-contained. The division of India has not affected the Indian Union very much in the matter of minerals. Except for petroleum, chromite, gypsum and Fuller's Earth, Indian Union has a complete monopoly of other minerals.

Lead, copper and zinc are also found, though not in sufficient quantities. Sulphur, in which India was lacking until lately, is at present available.

Considering the size and population of the country, the mineral wealth is not so vast as it is supposed to be. India's position with regard to supply of industrial minerals is as follows :—

(I) Minerals in which India has large exportable surplus to dominate world markets.

Iron Ore

Titanium ore

Mica

(II) Minerals of which the exportable surplus forms an important factor.

Manganese ore

Stealtite

Bauxite

Silica

Magnesite

• Monazite

Refractory minerals

Beryllium

Natural Abrasives

Corrundum

(III) Minerals in which India may be considered self-sufficient.

Coal

Limestone and Dolomite

Cement materials

Gypsum

Gold

Glass sand

Aluminium ore

Borax

Copper ore

Pyrite

Chrome ore

Nitrates

Building stones

Phosphates

Marble

Zircon

Slate

Arsenic

Mineral pigments

Barytes

Industrial clays

Precious and semi-precious stones

Sodium salts and alkalis

Vanadium

(IV) Minerals in which India has to depend largely or entirely on foreign imports.

Silver	Tungsten
Nickel	Molybdenum
Petroleum	Platinum
Sulphur	Graphite
Lead	Asphalt
Zinc	Potash
Tin	Fluorides
Mercury	Antimony

One of the greatest defects of the Indian mining industry is that many of the minerals like manganese, mica, ebonite, chromite, refractors, etc., are worked solely for the purpose of export. And if this is continued for long, India will find herself depleted of valuable key metals and minerals.

The mineral wealth of India should be utilised for the benefit of Indian Industries. Stoppage of export of key minerals and metallic ores in particular and control of the unrestricted export of raw manganese ore, chrome ore, mica, titanium ore, phosphatic materials and refractory materials in general, as well as a better adjustment of minerals, export and import tariff should be the measures in any scheme of planned economy of nation's mineral wealth.

MINERAL PRODUCTION OF INDIAN UNION AFTER DIVISION OF INDIA

Minerals.	Indian Union	India and Pakistan
Coal (million tons)	25 3	26 2
Iron "	2 3	2 3
Copper (lakh tons)	3 3	3 3
Manganese "	3 7	3 7
Bauxite (thousand tons)	12	12
Petroleum (million gallons)	98	97.5
Mica (000 cwt)	139	139
Chromite (000 tons)	40	40
Gypsum "	84	84
Fuller's Earth "	11	11
Salt (million tons)	1 2	1.2
Granite (lakhs of tons)	14	16
Limestone "	43	52

Iron

Iron is by far the most useful of all metals. The success of almost every industrial enterprise depends upon the extensive and efficient use of machinery and other economic equipment made wholly or in part from iron and its alloys. "Leadership in industry and trade demands an abundant and efficient use of mechanical equipment which in turn necessitates a plentiful supply of iron and coal."

India is the second largest iron-ore-producing country in the Commonwealth and occupies the ninth place in the list of iron-producing countries. Her resources in the high grade iron ore are perhaps the greatest in the world, with the possible exception of Brazil. The production of iron ore is at present about 3 million tons per annum *

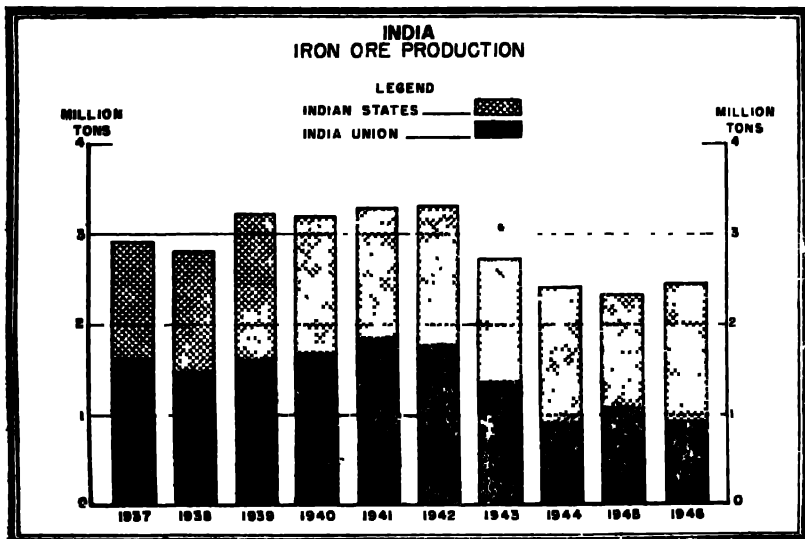


FIG. No. 102. Note the importance of States in the production of iron ore

The value of an iron ore deposit depends not only upon its richness in iron, but also upon its location and the ease or difficulty of mining. India is fortunate in this respect because

* According to Mr. Cecil Jones, Director-General of the Geological Survey of India, iron ore reserves in Indian Union amount to 3000 million tons. The American Technical Mission which visited India in 1942 put the iron reserves of the Singhbhum district at 3000 million tons and that of Baster State at 724 million tons. These reserves are supposed to contain 60 per cent. of iron.

most of her iron-ore fields are found within easy reach of coal-fields. Dolomite and limestones necessary for smelting are also found in the neighbouring areas.

There are four different types of iron ore in India—magnetite, laterite, clay iron stone and hematite. The hematites are the most valuable iron ores in India, and both in quantity and quality they exceed any other ores of the same kind including the great American occurrences.

Though deposits of iron ore of good quality are found in many parts of India, the most important fields are confined to the Singhbhum, Keonjhar, Bonai and Mayurbhanj States of Orissa. The less important areas are in Central Provinces, Madras and Mysore.

AVERAGE ANNUAL PRODUCTION OF IRON ORE¹

Provinces	Quantity (tons)	Provinces	Quantity (tons)
1. Orissa :		2. Central Provinces .	800
Keonjhar ..	3,00,000	3. Mysore State ..	24,000
Mayurbhanj ..	9,00,000		
Singhbhum ..	12,00,000		

The Mayurbhanj State contains large deposits of high grade iron ore in three principal fields—Gurumahisani, Sulaipat and Badampahar. These three fields are all high lands and are connected by the branch lines of the B. N. Ry. with Tatanagar, the centre of steel industry. These are also within easy reach of coal and dolomite fields and raise nearly one-third of the total Indian output. Singhbhum is the largest

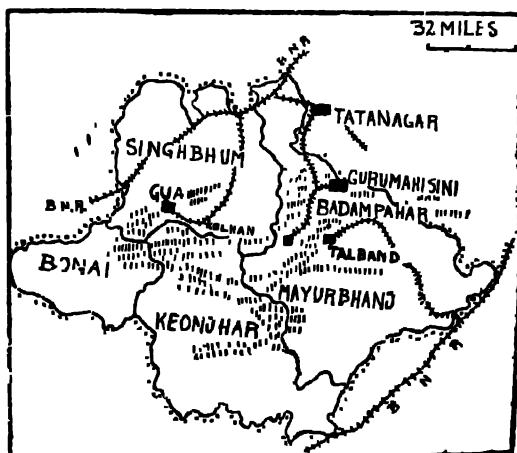


FIG. No 103 The iron-ore fields of Orissa.
Notice the B N Ry. serving the fields.

¹ * At present, iron ores are being extracted on a fairly large scale by three companies, namely, the Tata Iron and Steel Company, the Bird & Co. and the Indian Iron and Steel Company

iron-ore-producing area in India and rich deposits of high grade haematite occur in Pansira Buru, Gua, Buda Buru and Noamundi, all in the Kalhan estate. The iron contents of the ores of this area are greater than those of Mayurbhanj State. The fields are connected by the branch lines of the B. N. Ry.

Keonjhar possesses two fields—one in the Bagia Buru ridge and the other on the north-eastern part which is really a continuation of the Noamundi mine of Singhbhum. Manganese and dolomite are also raised in the neighbourhood.

The Central Provinces are rich in iron ores, but up till now the ores have not been exploited. In 1935 the total output was only 800 tons and these were mostly raised from the two fields of Lohara and Pipalgaon in the Chanda district. The Dalli and Rajhara hills in Drug district and the Bastar State hold out future possibilities.

In Mysore the main source of the ore supply is the Kem-mangundi field in the Babubudan hills. Iron ores are also found in other places of Mysore but they are not worked at present. Goa and the Ratnagiri district in Bombay hold out future possibilities. Recently large deposits of iron ore have been discovered in Sandur and Salem, Trichinapoly and Kurnool districts in Madras. The quantity of ore has been estimated at 304 million tons at Salem—Trichinapoly, 3 million tons at Kurnool and 130 million tons at Sandur. These fields can be developed for the erection of a steel plant in South India.

Iron ore reserves in India are much larger than the amount of coking coal available, and therefore, India can spare large quantities for export. The principal buyers are Japan, U. S. A. and U. K.

Manganese

Manganese is used for hardening iron and steel, in the manufacture of black enamel, in the chemical industry for the manufacture of bleaching powder and in electrical and glass industries. India is the second largest manganese producer in the world, led by the U.S.S.R. "As the demand for manganese is governed by its uses in the manufacture of steel, it is subject to great vicissitudes as the heavy industries rise and fall with the calls from trade and the manufacture of munitions."

THE CHIEF MANGANESE-PRODUCING COUNTRIES, 1938

(in 000 long tons)

U. S. S. R.	..	..	2,900	Cuba	..	..	122
India	..	..	968	Brazil	..	..	218
Gold Coast	..	..	324				
South Africa	..	..	543	World Total	..	..	5,700

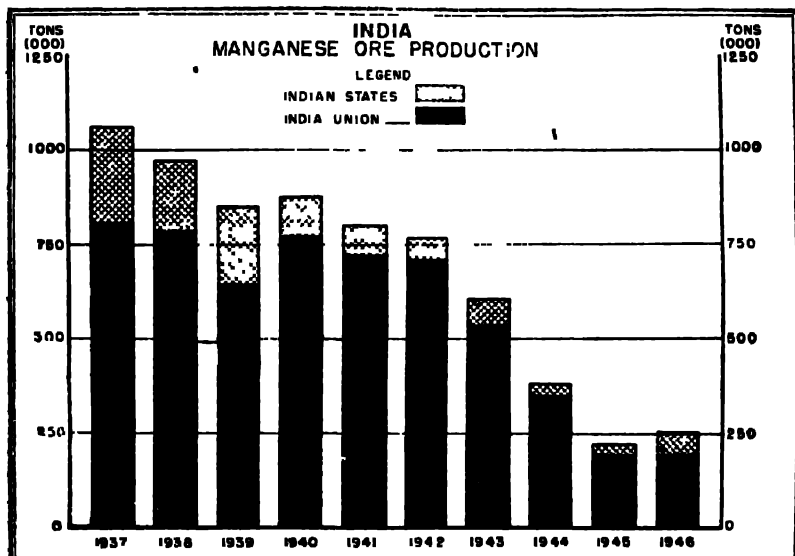


FIG No 104 Production is confined more in the provinces.
Note the decline after 1940

Manganese mining in India engages nearly 10,000 workers who are mostly recruited from the adjoining districts of production. The quarrying is easily and cheaply carried out by unskilled labour.

PRODUCTION OF MANGANESE IN INDIA
(1938)

	(Long tons)		(Long tons)
Central Provinces	.. 6,46,465	Orissa	76,691
		Bombay	61,598
Madras	.. 33,809	Mysore	5,323

The Central Province is the largest producer of manganese ore ; it is found there in the Balaghat, Bhandra, Chinduvra,

Nagpur and Jubbalpore districts. The province raises nearly 60 p.c. of the total Indian output. The industry has received great impetus by the opening of the Vizagapatam port, which now permits easy movement of the mineral to the port by the Waltair-Raipur railway line. Before the opening of the port, C. P. had to depend on Bombay or Calcutta for exporting manganese outside. Hitherto it was difficult to sell outside second grade manganese ore because of the high railway freight from C. P. to Bombay and Calcutta. Now, because of the new railway line it is possible for C. P. to meet a large portion of the world demand for second grade manganese ore.

A noticeable feature in connection with the export of manganese is the rapid stride made by Vizagapatam since the commencement of its career as a modern port.

The following figures show how the exports of manganese ore from Vizagapatam increased since 1930 and those from Marmagao, Calcutta and Bombay decreased.

SHARES OF PORTS IN THE MANGANESE TRADE (TONS)

	Vizagapatam	Bombay	Calcutta	Marmagao
1930	4,500	2,97,738	3,00,211	1,70,577
1935	4,12,683	64,100	2,25,504	1,62,411
1939	3,37,349	55,466	2,61,575	1,28,226

Madras produces a little more than half the output of manganese in the C. P. The producing areas are the Bellary district, Sandur State and Vizagapatam district. Much of the manganese ore is exported outside through Vizagapatam and Marmagao.

In Bihar manganese ores are found in several parts of Chota Nagpur, mainly in Kalhan and Singhbhum. A small production also comes from Chaibasa.

The Gangpur State and Keonjhar are the two important areas in Orissa for the supply of manganese. Bonai State and Ganjam also produce this ore in good quantities. In the Bombay Presidency manganese ore occurs in the Panch Mahal district, Chota Udaipur and Ratnagiri. In Mysore, though the fields are widely distributed, the output is very small, being less than 1000 tons, and it is raised in Chitaldrug, Kadur, Shimoga and Tamkur districts. Labour is easily available in Mysore.

Although there is a steady rise in the consumption of manganese ore by the Indian iron and steel companies, the prosperity of the industry will depend on its ability to put the mineral on the world market at competitive prices. The Indian iron and steel companies consumed hardly 60,000 tons in 1937 out of the total production of nearly 7,00,000 tons.

The principal importers of Indian manganese ore are U. K., Belgium, France and U. S. A.

EXPORT OF MANGANESE FROM INDIA IN 1938

	(Long tons)		(Long tons)
U. K.	145,085	U. S. A.	89,037
France	80,950	Germany	3,609
Japan	113,037	Italy	48,410
Belgium	8,962	Total Export ..	518,342

Just before the outbreak of the Second World War there was a sharp decline in the exports of manganese from India, owing to over-production of manganese in the producing countries, the decline in the activities of the iron and steel industry of Europe and the U. S. A. and the increased competition of Russia.

Copper

Copper is usually found in combination with silver, gold, iron, lead and sulphur. It is extensively used in the electrical industries as a conducting medium. In India copper is particularly important for brass making and coinage.

India occupies the thirteenth place in the list of copper-ore-producing countries of the world. In 1935 she supplied 11.3 thousand tons of contents of metallic copper out of the world's total of 1941 thousand. This figure compares very unfavourably with that of the U. S. A. which raises an annual average of over 330 thousand tons.

In India copper used to be smelted formerly in considerable quantities in Southern India (Mysore and Madras), Rajputana and in various other places.

At present it is mined on an extensive scale in two areas—Singhbhum and Nellore.

A copper-bearing belt persists for a distance of some 80 miles in Singhbhum where important fields like Mosabani, Ghatsila and Dhobani supply the major portion of the Indian output. The copper mines of Singhbhum employ more than 800 persons.*

The Nellore district of Madras exploits the copper ores on modern lines but the output is very small.

Copper ore also occurs in Hazaribagh, Central India and Mysore. Along the outer Himalayas, a belt of copper-bearing rocks runs through Kulu, Kangra, Nepal, Bhutan and Sikkim, which are now difficult of commercial exploitation owing to the inaccessibility of the areas and the lack of adequate communication.

Since 1930 the production of copper ore in India has been on the increase.

COPPER ORE PRODUCTION IN INDIA

		Tons		Tons
1929	..	76,831	1933	2,01,722
1930	.	1,23,749	1934	3,28,676
1931	..	1,53,636		
1932	..	1,75,010	1935	3,50,801

The prosperity of the Indian copper industry depends largely on the success of the brass-making industry. Recently, with the introduction of the aluminium products in the markets the demand for brass goods has fallen considerably in India.

Gold

Gold is mainly used for coinage and for the manufacture of jewellery. In the list of minerals in India, gold occupies the third place in value. But India's contribution to the world's total output of gold is only 2 per cent. Gold is more widely distributed throughout India than any other useful mineral with the exception of iron ore.

In India gold is found in Mysore, Hyderabad, Madras, the Punjab, U. P., Bihar and Orissa. About 99 per cent. of

* The Singhbhum copper mines are controlled by the Indian Copper Corporation Limited.

the Indian output comes from four mines in Kolar field in Mysore. The Kolar gold-field is 40 miles from Bangalore and lies on a highland of 2,800 feet above sea-level "*where there is a single gold bearing reef of quartz some four miles long*". The field employs more than 23,000 workers. Sivasamudram, 92 miles distant, supplies electrical power to the Kolar field. Two of the mines of Kolar field—Champion Reef and Oregum—are among the deepest in the world, well over 8000 feet. The quantity of gold produced at the Kolar fields from the commencement of operations in 1882 to the end of 1943 was about 20 6 million ounces*. The production of the field is, however, on the decline.

Not long ago the Raichur district in Hyderabad and the Dharwar district in Bombay produced a fairly large quantity but these fields have now practically been closed down. Though Anantapur in Madras contains several large quartz reefs, it does not at present produce any gold.

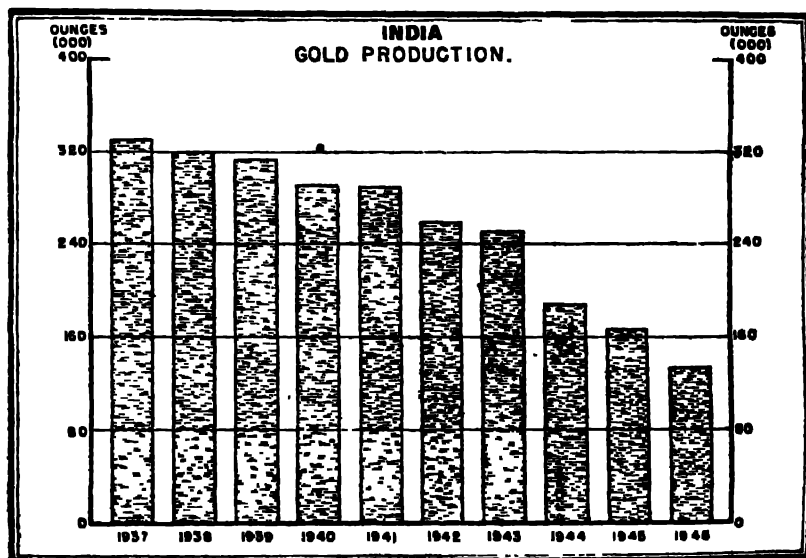


FIG. No. 105. Note the gradual decline in gold production.

Alluvial gold is found with sands in many rivers of India. It is recovered by the local inhabitants. Such areas are Singhbhum in Orissa ; Ambala district in the Punjab ; Bijnour district

* Report on Gold Mining Industry in India (Govt of India) 1946.

in U. P., and the Brahmaputra valley in Assam. The value of gold thus obtained does not exceed £300 a year.

Mica

India is the largest mica-producing country in the world and produces about three-quarters of the world's production.

Mica has been used in medicinal preparations and for decorative and ornamental purposes since early times in India. Today, it is one of the chief strategic minerals and is indispensable in the electrical industry. "The development of Wireless Telegraphy and Radio communication, aeronautical engineering and motor transport would have been impossible without it." Mica is also used as stove fronts, lamp chimneys, protective spectacles as well as in fire-proof points, patent roofing materials and as a decorative medium for fancy papers and ornamental tiles.

There is at present an enormous waste in the trimming and dressing of the crude mica. About 70 to 80 per cent of the crude mica is dumped as unmarketable refuse in the Hazaribag and Nellore mines. This waste mica is imported by the U.S.A. where it is turned to fine powder for various uses in electrical insulation.

The industry gives employment to about 32,000 persons. The aboriginal women and children who are generally employed in mica mines carry out the work with great skill.

Although mica is widely distributed, two principal areas control its production and trade. These are (i) the Bihar belt, a strip of country some fourteen miles broad and over 60 miles long, running obliquely across the districts of Hazaribagh, Gaya, Monghyr and Manbhum, and (ii) the Nellore district of the Madras Presidency.

AREAS AND QUANTITIES IN 1935

<i>Bihar :</i>		cwt.			cwt
Gaya	..	10,524	Nilgiris	..	43
Hazaribagh	..	37,679	Travancore	..	41
Monghyr	..	442	<i>Rajputana :</i>		
Manbhum	..	29	Ajmere	..	384
<i>Madras :</i>			Jaipur	..	160
Nellore	..	9,452			

Bihar may be regarded as the world's trustee for this mineral. The Bihar belt supplies more than 80 per cent. of the Indian output. Bihar mica is mainly of the ruby variety, the higher qualities of which known as *clear and slightly stained* are the finest in quality in the world and are greatly used in certain electrical industries. The Bihar belt is about 60 miles long and 14 miles wide and runs in a general east-west direction along Gaya, Hazaribagh and Monghyr districts.

The Nellore district of the Madras Presidency raises mica by open quarrying at Gudur, Kavali, Atmakur and Raipur. The fields are in the coastal plain and extend for about 60 miles. The Nellore mica has a greenish colour and is inferior to Bihar mica.

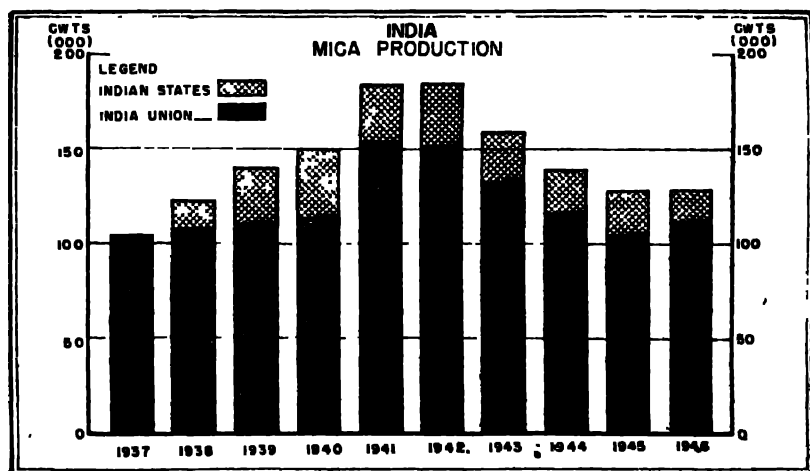


FIG No 106. Note the peak production in 1941-42.

The mineral is raised mainly for export because the internal consumption of mica in India is very small. In 1937 India exported nearly 3,00,000 cwt. of mica. The share of buyers of the Indian mica in the same year was as follows:

U. S. A.	45 p.c.	Germany	10 p.c.
U. K.	30 p.c.	Others	15 p.c.

The exports mainly go through Calcutta, Madras and Bombay. Calcutta alone handles 85 p.c. of export while Madras and Bombay handle 14 p.c. and 1 p.c. respectively.

The imports of mica into U. K. from Canada and Brazil have recently affected the Indian trade. Today Brazil is not only developing as a competitor to India in international mica markets, but has also been seeking to process her mica in India. In order to protect Indian interests and prevent unfair competition against Indian mica, it is necessary to stop importation of Brazilian mica.

Moreover, synthetic mica, of which the well-known products are Pertinax, Bakelite, Paxolin and Formalite are competing with natural mica.

Salt

In India salt is mainly obtained from three sources—(i) from sea water, (ii) from inland lakes and sub-soil water, (iii) from beds of rock salt. Indian production of salt in 1947-48 was about 520 lakh maunds. The chief salt-producing areas are Bombay, Madras and Rajputana. More than two-thirds of the total production come from the sea water of the Bombay and Madras coasts. Bombay salt works include Rann of Cutch, Kathiawar and the Bombay coast from Surat to Mangalore. Dharsana and Chharvad on the east of the Gulf of Cambay and Okha in Kathiawar manufacture salt in large quantities. Normally the manufacturing season is from January to June. A considerable quantity of salt also comes from the brine of wells on the Little Rann of Cutch. The saline content of the water is very high; and the salt is produced by solar evaporation.

In the Madras Presidency, the salt-producing districts are mostly confined to the eastern coast extending from the district of Ganjam to Tuticorin in the extreme south. Salt is also manufactured in the Udipi district in Malabar. Madras contributes more than 30 per cent. of India's total production. The average production is about 130 lakh maunds of salt. About 85 per cent of production is consumed in the province; the balance goes to Orissa, C. P., West Bengal and Mysore.

In West Bengal a few small scale factories and cottage workers in the coastal districts produce salt from sea water. The workers also produce salt by the artificial lixiviation process within scheduled areas of the coastal districts. Most of

Bengal's requirements are met by imports from Aden, Port Said and the Red Sea ports. West Bengal also brings salt from the west coast of India and Madras presidency. Salt production in West Bengal can be increased by the establishment of large factories along the Sundarbans. Along the Contai sea board of Midnapore the manufacture of salt by the method of solar evaporation is possible.

Another important source of salt is the sub-soil and lake brines of Rajputana where there are many lakes. The Sambar Lake, the largest of all, covers an area of 90 square miles and produces about a quarter of a million tons every year. The reason for the high percentage of salt is that during the summer the south-western winds carry particles of salt from the Rann of Cutch and deposit them in this part, which are again washed into the lakes with rain water. The salt output in Rajputana in 1947-48 was 128 lakh maunds, made up of 100 lakhs of maunds from Sambar Lake. Rajputana Salt is mainly distributed to East Punjab, Delhi, U. P., Central Provinces and Central India.

Before the partition of India, rock salt used to come from the mines of the Punjab Salt Range and Kohat in the Frontier Province. In the Dominion of India rock salt is available only in the Mandi State in the Eastern Punjab. Indian production represents about three-fourths of the annual consumption of salt in India.

Indian consumption of salt is for about 620 lakh maunds. The gap between demand and domestic supplies is covered by imports mainly from Aden and Western Pakistan. The United Kingdom, Egypt and East Africa also send considerable quantities of salt.

Saltpetre. Saltpetre has great industrial demand. It is used in the manufacture of glass, for food preservation and for manurial purposes in addition to its importance as a constituent of gun powder. Bihar and the United Provinces are the important producers. The main centre of manufacture is Farrukhabad in U. P. Nearly the whole of the output is exported and a small part is retained in the country for the Assam tea gardens. Saltpetre is exported to the U. S. A., China, U. K., Mauritius, Ceylon and Straits Settlements.

Silver is obtained native and in combination with other metals, the chief of which are gold, lead and copper. Silver is used in India for the manufacture of ornaments, table utensils and coinage. India is by far the greatest consumer of silver in the world. In 1935, before the separation of Burma, the output of Indian silver amounted to 58,50,406 oz. of which Burma alone contributed 58,25,913 oz.

Silver is obtained from the Kolar gold-field in Mysore and Manbhum in Bihar. Anantapur in Madras, once an important supplier, does not raise it any longer.

Chromite has considerable demand in the manufacture of ferro-chrome, chromite steel and chromite bricks. This is also the source of chromium salt necessary for tanning and dyeing.

Mysore is the principal supplier of chromite and contributes nearly 65 per cent. of the Indian output. Shimoga and Hassan are the two main fields of Mysore where production is on the increase every year. The next important supplier is the Singhbhum district in Orissa which raises nearly one-third of India's total ore. The other areas where chromite occurs are Ranchi and Bhagalpur districts in Bihar.

Practically the whole output is exported outside. The principal purchasers are the U. K., Norway, Sweden, Germany and U.S.A. The shipment goes through Madras and Calcutta.

Indian chromite has its rival in the European markets in that of Rhodesia and New Caledonia.

Antimony is a useful alloy for mixing with softer metals. Although India does not at present produce antimony, the future possibilities for the development of this industry are great. A considerable quantity may also be obtained from the Chitaldrug district in Mysore.

Tungsten or *wolfram* is used in the manufacture of hard steel and in the form of wire in electric bulbs. This metal ore occurs in Singhbhum in Orissa, the Marwar district of Rajputana and in C. P., but these deposits are in small quantities.

Gypsum is necessary for making fertilisers and in the making of certain kinds of paper. It is also used in India in considerable quantities in the cement industry. It can also be used as a source of sulphuric acid. It is found in Rajputana, East Punjab, Kashmir, Madras, and Kathiawar.

By far the most important producer is Rajputana where the mineral is found in Bikanir, Jodhpur and Jaisalmer. Rajputana raises nearly 80 p.c. of the Indian output.

In 1929-33 India produced 50,112 tons of gypsum of the world's total of nearly 12 million tons.

Graphite is used in the manufacture of stove grate polishes and paints, as a lubricating agent for certain types of machinery and in making lead pencils. Up till now this mineral has not been commercially exploited although its deposits are believed to exist in Travancore, Godavari district, Vizagapatam, Orissa, C. P. and Ajmer-Marwara.

Asbestos is a silky, fibrous mineral found usually in veins. It is used mainly in the manufacture of fire-resisting materials. India raises a very small quantity of asbestos from the Bangalore district of Mysore, Ajmer-Marwara in Rajputana and Cuddapah district of Madras. India has to import every year large quantities of asbestos goods. There are however great prospects for an asbestos industry in India.

Diamond. Although the Indian diamond industry is the oldest in the world, its present output is insignificant. In 1935 it raised diamond worth only about Rs. 1,00,000.

Diamond occurs in the Anantapur, Bellary, Kistna, Guntur and Godavari districts of Madras ; Sambalpur district in Orissa ; Chanda district in C. P ; and in Bundelkhand in Central India States. Although the Indian diamond industry is the oldest in the world, its present output is negligible.

Power Supply-in India

For the purpose of industrial development, a country should have cheap motive power. The principal sources of power, available in India are coal, wood fuel, oil, alcohol, wind and water.

The annual production of electricity in India is a little above 2,500 million units. "The consumption of electricity per capita in India is, therefore, a little over 7 units at the most. This is about $\frac{1}{4}$ that of Mexico, a country which the public in India considers rather backward and $\frac{1}{3}$ that of Bulgaria which is a very backward European country. This shows that in the scale of civilisation India comes quite as low

as China, or Abyssinia, as far as production of electricity is concerned."

The situation of India, with regard to the supply of coal, wood fuel or oil, for the purposes of generation of power, is not quite favourable. Coal is of inferior quality and it is most unevenly distributed. Indian forests are generally confined to hilly tracts from where transport is difficult and expensive. The production of petroleum in India is decreasing and, therefore, unless new fields are found, it cannot provide power on a large scale.

Coal. In India coal is the most important mineral product in respect of value and quantity. India is the second largest coal-producing country in the Commonwealth and occupies the eighth place in the world. The output of Indian coal in 1943 was 25·2 million tons.

The division of India has not affected the position of the Indian Union with regard to coal supply. India's coal industry suffers from a number of drawbacks. Indian coal is generally poor in quality: its fuel properties, that is, the percentage and condition of carbon contents, are definitely lower than those of European or American coal. With the exception of Jharia coal, Indian coals have usually high proportion of moisture. The coalfields are again very unevenly distributed. More than 98 per cent. of the total output comes from one big belt—the Lower Gondwana coalfields (in Bengal, Bihar, Orissa, Central Provinces and Hyderabad). The Peninsular India is very deficient in coal deposits and coal is totally absent in U. P. The transhipment of coal entails great difficulties in view of its bulky size. Hence it can be easily realised how expensive coal becomes as a source of motive power in industries in India, where coal must needs be carried over long distances. There is another consideration. It is not desirable to depend entirely on coal power as it is a diminishing asset and get consumed in the process of power generation. It is necessary to reserve coal for purposes that require and must use thermal power. Coal is also one of the important raw materials for synthetic chemical industries.

The coalfields are not situated either near the coast or in the valleys of navigable rivers. In the United Kingdom, the

coalfields are all found within easy reach of the sea coast; in Germany the fields are found along the basins of the big navigable rivers. This distance of coalfields from the sea and navigable rivers compels the Indian coal industry to look to railways for the movement of its products and consequently the freight is high.

Coal reserves in the Indian Union of different varieties upto one foot thickness of seams and within 1,000 ft. are 60,000 million tons which are mostly found in the Gondwana Basin. The total workable coal is estimated to be 20,000 million tons.

TOTAL COAL RESERVES*

	Million tons
1. Darjeeling and Eastern Himalayas ...	100
2. Giridhi, Deoghar ...	250
3. Ranigunj, Jharia ...	25,650
4. Sone Valley ...	10,000
5. Chattisgarh and Mahanadi ...	5,000
6. Satpura Region ...	1,000
7. Wardha Valley ...	18,000
	60,000

(Of these reserves good quality coal is only 5,000 million tons. The coal reserves of the Indian Union are thus very small compared to U.S.A., U.S.S.R., England and Germany.

Geologically, the coalfields of India may be divided into two classes: (a) The Gondwana system of strata extending from Bengal, Bihar and Orissa to Hyderabad including Central India Agency and Central Provinces and (b) the Tertiary beds found in Assam and Rajputana.

It is reported that the Garo Hills in Assam contain large deposits of very high grade coal. The Central Government decided to undertake prospecting the area directly. The coal in these fields may rank among the best in the world. These fields when developed will make Assam self-sufficient in coal, thereby realising a large quantity for export. Recently the

* Power and Fuel (National Planning Committee Report), 1947.,
FIG. No. 105. Coalfields of Bengal, Bihar and C P (in parts).

Geological Department has also discovered lignite deposits in South Arcot districts, covering an area of 16 square miles with 32 feet in thickness. This is perhaps the longest "find" in India. It has yet to be tested to what use this lignite could be put—whether for locomotives, or for extracting gas or synthetic petroleum.

GONDWANA BELT

Provinces

Fields

West Bengal

Raniganj.

Bihar and Orissa

{ Jharia, Bokaro, Giridih, Rajmahal Hills, Palamau (Aurunga, Hutar and Daltanganj), Talchar, Rampur (partly in the Sambalpur district and partly in the Raigarh State in C. P.) Ramgarh, North and South Karanpura

Central India

Umariya, Sohagpur, Singrauli.

Central Provinces

{ Mohpani, Shahpur, Pench Valley, Warora, Yeotmal, Ballalpur (also known as Sasti field. It lies partly in Hyderabad).

Hyderabad

Sasti, Tandur, and Singareni.

TERTIARY BELT

Provinces

Fields

Assam

Nazira, Makum.

Raniganj, the earliest coalfield to be worked in India, covers an area of 600 square miles. It contributes near about one-third of the total coal production in India. The Raniganj mines are the deepest in India and seams occur upto a depth of more than 2,000 ft. The E. I. Ry. with its branch lines serves the field.

The Jharia field, 140 miles north-west of Calcutta, covers an area of 175 square miles. It is 16 miles west of Raniganj. More than 50 per cent. of Indian output comes from Jharia. Seams occur upto a depth of two thousand feet. Both E. I. Ry. and B. N. Ry. serve the Jharia field.

Close to the Jharia field to the west is the Bokaro field with an area of 220 square miles. The North Karanpura field is very extensive and covers an area of more than 450 square

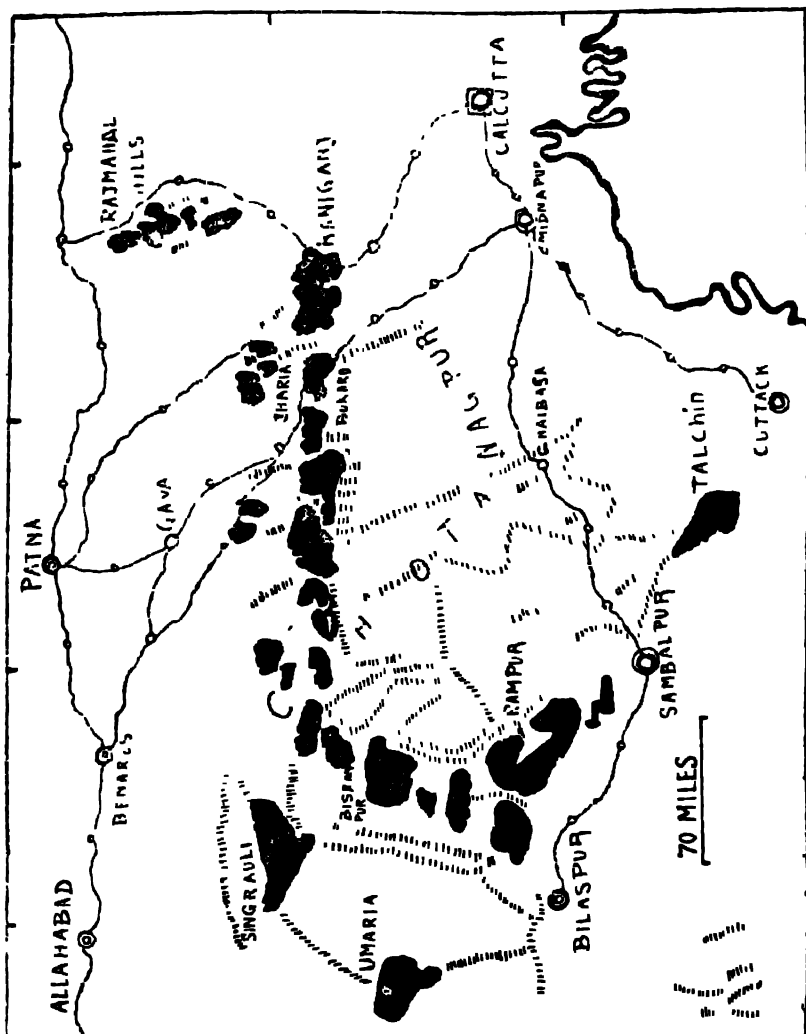


FIG. NO. 107 Coalfields of Bengal, Bihar and C P (in parts).
Notice railway lines serving these fields.

miles. Though it is not important to-day, yet in future it may become a great supplier of coal. In 1930 North and South Karanpura raised more than 2 p.c. of the Indian output. The

Giridhi coalfield is a small one, but it yield some of the best coal to be found in India and largely used in metallurgical industry.

In Central India, there are two fields—one in Sohagpur in Rewa and other in Umaria, near Katni. Sohagpur has an area of 1,200 square miles and raises nearly 1 million tons annually.

There are many coalfields in C. P. scattered throughout the Rewa-Gondwana basin, the Satpura region and Wardha valley. Two fields are very important—one in the Pench Valley in the Satpura region and the other Ballalpur in the Wardha valley. In 1935 C. P. raised more than one and a half million tons of coal of the total 23 million tons.

In Hyderabad, the principal coalfield lies in Singareni, 146 miles from Hyderabad city. "The coal itself is a dull, hard, non-coking, steam coal largely consumed by railways and mills in Southern India."

Tertiary coalfields are worked in Assam, and Rajputana and they supply nearly 2 p.c. of the India's total output. Assam raises more than 50 p.c. of the tertiary coal. Makum contains coal of excellent quality which is largely consumed by the railways, steamer companies and tea factories in Assam.

Coal is used in India for the production of electrical power, for the running of railways, for propulsion of ships, for running other industries with steam power, for smelting purposes, for such industries as glass, cement, etc and for domestic purposes. A small quantity is used for conversion to gaseous fuel.

Railways, iron and steel and brass foundries consume more than half of the total available coal in India. Domestic consumption is as yet small although intensive propaganda is being carried on for the popularisation of soft coke as a domestic fuel.

CONSUMPTION OF COAL IN INDIA 1938-39

	p.c.		p.c.
Railways	31.9	Brick & Tile factories ..	3.5
Iron, steel and brass foundries	24.4	Jute mills	2.9
Cotton mills	6.7	Inland steamers	2.4
Consumption at collieries	5.3	Tea Garden	0.8
Bunkar coal	4.5	Paper mills	0.7
		Port Trusts	0.6
		Other forms	16.2

The demand for coal by the railways from the open market is sharply declining. This is because much of their requirements of coal by the E. I. Ry. and B. N. Ry. is met by their own collieries.

The coal industry of India gives employment to more than 230,000 people who are mostly recruited from Chota Nagpur, Central Provinces and Bihar. Many of these labourers do not work in the mines throughout the year. In the agricultural seasons, particularly in the harvesting periods, they go back to their respective villages. This problem of periodical shortage of labour in the coalfields has been solved to a certain extent by the use of electricity in the mines for pumping and coal-cutting.

Indian labourers are not very efficient. This is reflected in the low average annual output per head of labour in the mines. In the U. K. the average output per head is 290 tons (above ground) and 300 (below ground) as compared with 130 (above ground) and 180 tons (below ground) in India.

The large export trade in coal once held by India has fallen greatly in recent years. Ceylon, Straits Settlements, Penang, Aden and Perim used to take considerable quantities of Indian coal. The Japanese, Australian and South African competition before the Second World War brought about a great decline in the export of Indian coal.

The inferior quality of Indian coal generally, and the unequal distribution of coalfields in particular, necessitate the importation of coal from the U. K., Natal, Portuguese East Africa, Japan and Australia. The western parts of India cannot conveniently bring Bengal and Bihar coal because of the high cost of transportation. Moreover, railway wagons are not always available for the movement of coal to distant places, as these are engaged for grain and fodder. At present the Coal Wagon Supply Committee controls the supply of wagons for coal. A Board has also been formed—the Indian Coal Grading Board—to maintain the standard of exportable coal “so that oversea buyers may rely on the quality of the material supplied to them.”

The use of coal directly as a power is wasteful and uneconomic, and can be avoided by converting coal into electricity. Besides, its conversion into electricity will permit the utilization

of a number of by-products. "By electrification two-thirds of fuel consumed in industry and four-fifths consumed in colliery furnaces can be saved.

"With the outbreak of war in 1939, demand for coal became brisk and the export trade surpassed all previous records." In 1930-40 India exported 2 million tons of coal compared to 1.3 million tons in 1938-39. In the same year, the production of coal was raised to 29 million tons. But in 1943, the coal-raising was disturbed due to shortage of labour and inadequate supplies of stores and machinery, so that the production of coal was lower by 8 p.c. compared to 1942

To solve the problem of shortage of labour, the Government has allowed women to work underground. The Government has further introduced a *coal control scheme* according to which all coal-owners are required to produce a certain minimum quantity and to work under conditions laid down by Government in regard to employment of labour, payment of wages, etc.

Petroleum

In terms of value, petroleum occupies the fifth place among the minerals of India. Its products are very important for the growth and expansion of many industries in India. Petroleum requires refinement before use. The manufacture of petroleum products is carried on by the distillation process. The refineries are mostly located near the oilfields and are capable of handling enormous quantities of crude oil. The products of petroleum are gasoline or petrol, fuel oil, kerosene and lubricants and these are used in steamships, railroads, manufacturing and domestic heatings. The position of India as a supplier of oil is not at all satisfactory and her output, including that of Burma, represents less than one per cent. of the world's total.

There are two distinct oil-bearing areas on either side of the Himalayan arc. The one on the east, and by far the most important, is Assam; the other on the west comprises the Punjab, Beluchistan, North-west Frontier Province and Sind in Pakistan.

The eastern oil-bearing belt stretches from the extreme north-east of Assam to the eastern borders of the Brahmaputra and Surma Valleys. The Digboi field in the Lakhimpur district

of Upper Assam covers an area of $2\frac{1}{2}$ square miles and is the most important oil-producing field in India. The important oil centres are Digboi, Bappapung and Hansapung. An up-to-date refinery near Digboi has been established recently to distil the crude oil. In the Surma Valley some oil of poor quality is found in Badarpur, Masimpur and Patharia. In the Badarpur field, the production is on the decline.

The oilfields of Assam are connected by railways and rivers with Calcutta through Eastern Pakistan. Bengal Assam Railway runs as far north as Sadya, a little north of Digboi. Digboi is connected by a branch line with Dibrugarh, an important river port. The Cachar field is practically on the main line of the B. A. Ry.

Before the separation of India, the annual average production was a little above 98 million gallons.* To-day, as a result of the separation, the output must have come down to near about 80 million gallons. The home supplies are therefore still more insufficient to meet the internal demand. Nearly 300 million gallons of petroleum are imported annually from Iran, U. S. A., Borneo, Burma and Russia.

AVERAGE IMPORT OF PETROLEUM IN INDIA

		p.c.				p.c.
U. S. A.	17.2	Borneo	..	..
U. S. S. R.	13.6	Others	..	..
Iran	42.7			12.8

It is interesting to note in this connection that the major portion of the imported oil comprises of kerosene and fuel oil. Petrol accounts for only 3% of the total imported oil.

			p.c.				p.c.
Kerosene	..	..	39.9	Petrol	..	..	2.7
Fuel oil	..	..	46.0	Other kinds	..	..	1.4
Lubricating	..	..	4.5				

The exports of mineral oils are negligible. In the pre-separation days, India exported benzine, benzol, petrol and other motor spirits to the United Kingdom, Ceylon, Straits Settle-

* Even then the home supply was 35 to 40 p.c. less than the total demand.

ments, France, Italy and Egypt. In 1920 she exported 30 million gallons. In 1936 the figure came down to 60,000 gallons. This fall in the exports of mineral oils was due to the greatly increased demand in India resulting from the development of road transport and increased consumption as illuminants in place of vegetable oils. The consumption of paraffin wax being insignificant in India, the export trade in it has developed considerably in recent years.

The low production of mineral oil in India cannot be a handicap to the progress of industries dependent on oil. India has inexhaustible resources for the manufacture of synthetic fuel oils from sugar-cane and oil-seeds. The sugar factories of India throw away every year nearly a quarter million tons of molasses which could be very well utilised for the production of alcohol. When mixed with petroleum, this alcohol becomes an excellent fuel power for automobiles. It is also possible to utilise vegetable-oil contents for the preparation of fuel oil.

Moreover, there is room for restrained optimism about future petroleum discoveries in India. Little has been done so far to explore possibilities.

The Development of Hydro-electricity

Cheap power is the vital need of the country at the present moment. The total installed capacity of electrical power in India in 1946 was 1.4 million K. W. of which 494,000 K.W. was hydel power.

The aggregate water-power potential of India is very great being in the neighbourhood of 40 million K.W. The magnitude of the water-power resources will be patent from the fact that India today exploits only about one per cent of her water power potential.

The ratio between the total water-power developed in various countries and their estimated water-power is as follows :—

		p.c.				p.c.
Soviet Russia	34	Norway	..	.. 53
France	32	Canada	..	.. 34
Germany	54	U. S. A.	..	.. 24
Switzerland	67	India	..	... 1
Sweden	27			

Possibilities are therefore immense in India for the development of water-power

Indeed, India promises to be one of the leading countries in the world in the development of hydro-electric power. The great advantage of water power is that in the process of power generation, we merely utilize the gravity of water and do not consume any substance. "If we do not put this resource to use, we are not storing or preserving, we are merely wasting it."

The total installed capacity of hydro-electric power in Indian Union so far has not passed the half million kilowatt mark, although the total water power potential must be near 40 million kilowatts.

Water power schemes are, generally, difficult of materialisation in India, because the power needs to be continuous, while rainfall is seasonal. Hence, costly storage works are indispensable. Favourable sites for storage works exist in many parts of the mountainous and hilly regions where the rainfall is heavy. Hydro electric schemes have developed in Bombay, Mysore, Kashmir, Madras, U. P. and East Punjab. Western India has practically no coal, but this is compensated for by the magnificent hydro-electric power resources in the Ghats.

In the Western Ghats of the Bombay Presidency, there are three great hydro-electric power stations, developed respectively at *Lonavala*, *Nila Mula* and the *Andhra Valley*. The *Lonavala* works are situated at the top of the *Bhor Ghats* where rain water is stored up in three lakes, namely, *Lonavala*, *Walvan* and *Shirawata* from where it is conveyed by canals and pipe lines to *Khopoli* at the foot of the Ghats for generating power. The *Andhra Valley Power Supply Company* is situated at *Bhivpuri* on the *Andhra* river where a reservoir has been constructed by means of a dam across the river. To the south-east of Bombay on the *Nila Mula* river a great hydro-electric scheme was developed in 1927 at *Bhira*. All these three works have been developed through the enterprise of Messrs. *Tata and Sons of Bombay* to provide Bombay, Thana, Kalyan and Poona with energy.

Southern India has developed, in recent years, hydro-electric power at various places. The first Hydro-electric scheme was given effect to in India in 1920 on the *Cauvery* river in *Mysore*.

The Mettur Hydro-electric Scheme is situated immediately below the Mettur Dam. The Mettur Dam, one of the largest of its kind in the world, has been constructed mainly for irrigation, and part of the water let down for irrigation is utilised to the best advantage for the generation of hydro-electric power. The Mettur power scheme provides the districts of Salem, Trichinopoly, Tanjore, North Arcot, South Arcot and Chittor with energy. The Mettur scheme is linked with the Pykara works at Erode.

Madras has another scheme on the Tambraparni river at the foot-hills of the Western Ghats above Papanasam in the Tinnevelly district which supplies to Tinnevelly, Koilpatti, Madura, Tenkasi and Rajpalayam.

A number of schemes are being worked out in Upper India, particularly in Kashmir, East Punjab and the U. P. for the manufacture of electrical energy from hydro-electric power resources. Kashmir has developed a hydro-electric scheme at Baramulla, thirty-four miles north-west of Srinagar. The power station utilizes the waters of the Jhelum river.

In East Punjab the Uhl River scheme supplies 50,000 K.W. power to the East Punjab Railway and to several industrial towns like Amritsar, and Ludhiana. The Uhl from which the power is generated is a small river in the Mandi State. The transmission system serves all big towns lying in the belt between Gurudaspur and Ferozepore as well as Simla, Ambala, Patiala and Gujranwala. In near future the supply will be extended to Saharanpur, Meerut, Delhi and districts of Karnal, Panipat, and Rohtak. The scheme aims at providing industrial power and light for the towns of the Punjab and assisting agriculture in a number of ways by preventing water-logging and raising water to the required level on irrigated lands.

Recently in U. P. hydro-electric works have been opened in the Upper Ganges area to supply power to agriculture and industries. The Ganges Canal in its course from Hardwar to Meerut passes over 12 falls which range in height from 10 to 15 ft. The Government of the province made a scheme in 1926 to obtain energy from these falls and at present there are seven hydro-electric stations, situated as follows: Bahadurabad, Mohamadpur, Chitaura, Salawa, Bhola, Palra and Sumera.

More than fourteen districts of the Upper Ganges area are served by these hydro-electric works. A hydro-electric scheme is also being developed in Travancore at Pallivasal which will generate 22,500 K.W.

The various multipurpose projects which are under construction will add, when completed, about 9 million K.W. of hydro-electric energy to the country.

PRINCIPAL MANUFACTURING INDUSTRIES

In recent years several important manufacturing industries have been established in India. The relative importance of the principal industries in India is determined generally on the basis of the number of workers employed. In 1935 nearly two million people were employed in the different major industries of India.

INDUSTRIAL DISTRIBUTION IN INDIAN UNION IN 1947

	No. of Factories		No. of Factories
Cotton Mills ..	393	Chemicals ..	35
Jute ..	106	Paper ..	16
Sugar ..	142	Match ..	107
Iron and Steel ..	13	Woollen Mills ..	22
Cement ..	13	Silk Factories ..	90
Soap ..	16		
Glass ..	77		
		Total	1,030

The distribution of manufacturing industries in India is very uneven. It has been found that some industries would always concentrate in particular localities. The centralisation of industries is noticeable in cotton textiles, jute, sugar, paper, matches, woollen, silk, leather and iron and steel production.

This tendency towards centralisation is being now criticised in many quarters. There is a feeling that location of an industry should be made on the basis of the distribution of population in different provinces.

The decentralisation of industries is desirable to give as far as practicable equal opportunities of development to every pro-

vince. Bombay Presidency, Delhi, Baroda, Mysore, Ajmer-Merwara and Central India possess more mills measured in terms of demand for cloth by the people of these provinces while there is little or no development of cotton industry in areas like Assam, Orissa, Andhra and Eastern U. P.. Bengal and United Provinces should have more cotton mills because a large portion of the internal demand for cloth at present is met from outside supplies. Since the market for cloth is measured by the distribution of population, the same basis should be followed in the establishment of cotton industries in different provinces.



FIG. NO. 109 Map showing the centres of cotton, wool, iron and jute industries.

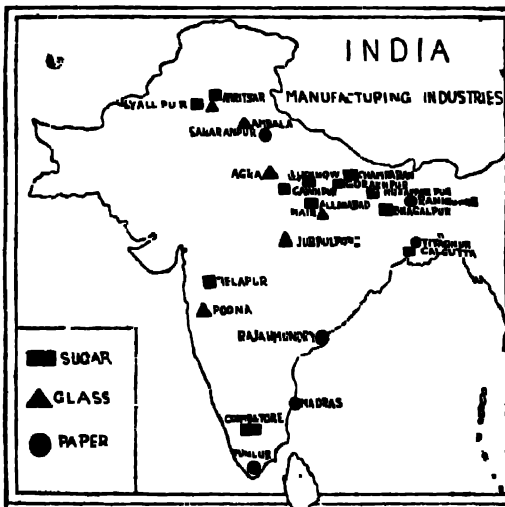


FIG. NO. 110. Map showing the industrial centres manufacturing sugar.

The iron and steel, silk, sugar industries, match factories and paper mills have considerable scope for decentralisation. On the other hand, the jute and woollen industries cannot be at present made capable of dispersal.

The principal manufacturing industries of India are controlled both by the Indians and the Europeans. The European

capitalists have invested more than Rs. 90 crores in purely manufacturing industries. The jute mills of Bengal, the tea plantations of Assam, gold and coal mining, engineering works, and woollen mills and tanneries of Kanpur are practically in the hands of the Europeans. The main cause of the supremacy of European capital is that the indigenous capital is not coming in quantity "for accelerating the progress of our material and industrial regeneration." Moreover, the country lacks in capital goods and technical personnel. In more recent years, the indigenous capital has been coming out freely, and its greatest achievements are in the lines of cotton mills industry, iron and steel industry, sugar factories, cement works and small mills.

The manufacturing industries of India are mainly confined to Bombay, Bengal and Madras, where power, labour and transport facilities are excellent.

In the list of the major industries the two characteristics are the predominance of the textile industries and the subordinate position of chemicals and paper.

The Cotton Textile Industry

India is now one of the leading cotton manufacturing countries of the world; she is second in the production of cotton and third in the number of persons employed among the countries manufacturing cotton.

The first cotton mill in India was started in Ghosery on the Hooghly in 1822. The real progress started from 1854 when Bombay had its first cotton mill. At the end of the year 1946, there were more than 410 working mills giving employment to more than 5,00,000 persons in India.

Because of the division of India, the Indian Union has now 395 cotton mills. The production of cloth in the Union is 6,045 million yards compared to 425 million yards in Pakistan.

At the present moment four areas lead in the production of cotton goods. These are Bombay, Bengal, Madras and the U. P.

DISTRIBUTION OF COTTON MILLS IN INDIAN UNION

Provinces	Existing Mills	Provinces	Existing Mills
Bombay ..	222	Hyderabad ..	6
Madras ..	47	Ajmer-Merwara ..	4
U. P. ..	26	Berar ..	4
West Bengal .	39	Mysore ..	6
C. P. ..	7	Pondicherry ..	3
East Punjab .	2	Cochin ..	1
Delhi ..	8	Kishanganj ..	1
Indore ..	7	Rajnandgaon ..	1
Gwalior ..	8	Travancore .	1

The lines of cotton manufactures consist of yarn and woven goods ; and these supply more than 80 per cent. of the country's requirement for mill-made goods. The woven goods are grey and bleached piece-goods, coloured piece-goods, hosiery, cotton goods mixed with silk or wool and miscellaneous.

The Bombay Presidency has 222 mills, of which Bombay Island and Ahmedabad possess 70 mills each. Judged by the quantity and value of production, Bombay ranks first in the list of cotton manufacturing centres.

The localisation of cotton industry in the city and Island of Bombay has been governed not so much by natural and permanent factors as by capital and credit advantages, the presence of adequate means of communication and the fact of Bombay being a port. The climatic condition of Bombay is such that it favours the production of yarn of finer counts, but the preponderance of higher counts is a feature of the Ahmedabad cotton industry, and not so much of Bombay. Again, Khandesh, Berar and Wardha, where raw cotton is grown, are nearer to Ahmedabad than Bombay. When the cotton textile industry was established, Bombay had not developed hydro-electricity and depended on Bengal for coal. The supply of labour came, as now, from other districts.

In spite of all these defects, Bombay is still the principal centre of the industry. It proves, therefore, that certain advantages are definitely on the side of Bombay: (i) Credit and banking facilities, (ii) the natural harbour. The cotton crop of the province gravitates in large quantities to Bombay for export and so a special flow of cotton for the purpose of

mills need not be created. The port also enables Bombay to import machinery and other requirements from England, Germany and U. S. A. with ease.

Therefore Bombay has combined the textile specialisation of Manchester with the commercial and shipping characteristics of Liverpool.

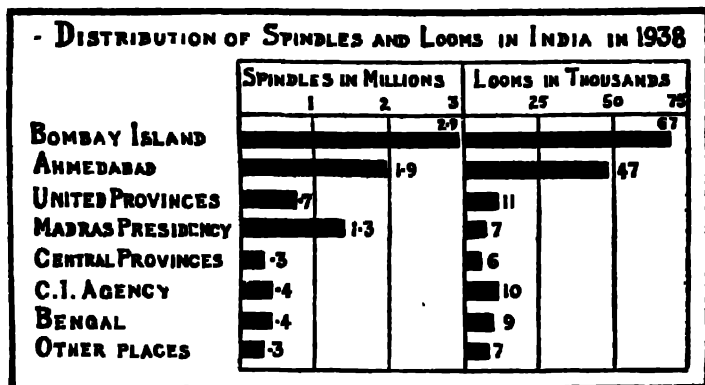


FIG. NO. 111.

The bulk of the cloths produced in Bombay City consists of light texture cloths made from medium count yarns. During recent years many Bombay mills have specialised on fine count cloths. Longcloth, shirting, T. cloths, domestics and sheetings account for more than 50 per cent. of the production, while the remainder consists of dhoties and coloured goods.

Other cotton textile centres in the Bombay Presidency are Ahmedabad, Sholapur, Belgaum, Broach, Jalgaon and Surat. Ahmedabad is capable of producing almost any grey, bleached, woven coloured or printed cotton fabric in general demand. Her annual production exceeds 1,000 million yards of piece-goods. Ahmedabad also produces dhoties and saris on an extensive scale.

The Cotton Mill Industry in West Bengal has made exceptional progress in the last ten years. At present the production is mostly confined to grey and bleached goods with dhoties for home consumption predominating. There are now 40 cotton mills in West Bengal and a few more mills are in the course of

erection. The cotton mill industry is highly localised in the Hooghly basin within a radius of 32 miles from Calcutta. The Hooghly basin offers unique opportunities for the development of industries inasmuch as the area is served by a perfect network of railways and riverways. Calcutta, by bringing mill machinery and raw cotton from abroad, distributes them to the different cotton centres of the Hooghly basin. The economic advantages of Calcutta in being near to Jharia and Raniganj coal-fields, besides being itself a money and labour market, have influenced greatly the concentration of cotton textiles around the city.

The prospects of cotton mill industry in West Bengal are indeed very bright. West Bengal is a great market for cotton goods in India. The Bengal mills cannot satisfy the local demand to any appreciable extent. Thus the Bengal mills have before them a wide scope for expansion. Moreover, the neighbouring provinces of Assam, Bihar and Orissa will offer a vast market for the Bengal mills. As the province is intersected by many rivers, the atmosphere is very humid.

The moist climate of Bengal is no less important. Cotton industry requires moist atmospheric conditions, otherwise thread breaks. The climate of the province is certainly an advantage, if not over Bombay and Ahmedabad, at least over the up-country towns of Kanpur and Delhi, where the humid atmospheric conditions are created in the mills artificially. As regards labour, "a factor very much in favour of Bengali labour is that he is more intelligent, though physically a bit poorer, than outside labourers. But workers in the mills do not presumably require very strong physique, because the operations are such as require a sensitiveness to touch and flexibility of fingers more than physical exercise, which it does not take long time to develop."

The only problem is the question of raw materials. Bengal is situated far from the cotton-growing areas of India. But then, the high price paid for raw cotton will be compensated largely by the economy in the freight on coal.

The third largest cotton manufacturing province is the United Provinces. Its disadvantage of being located far off from the coal-fields is compensated by the presence of a large

local market, cheap and efficient labour and excellent transport facilities. The cotton industry is particularly confined to the Ganges towns. Kanpur is the most important cotton manufacturing centre. The cotton manufactures in the U. P. are yarn, grey and coloured piece-goods, hosiery and carpets. The U. P. produces about 230 million yards of cloth per annum, of which grey and bleached goods account for 95 per cent. of the production. Cotton carpets are becoming important of late, and the centres of manufactures are Bareilly, Aligarh, Agra, Moradabad and Etawah in the United Provinces. Tentage and dosuti fabrics are made in Kanpur.

Other cotton manufacturing centres of India are Ludhiana, Delhi, Nagpur, Madura, Madras and Coimbatore.

Delhi specialises in the production of coarse count cloths and produces considerable quantities of dhoties and tentage materials and excellent upholstery and tapestry fabrics. Madras has about 50 cotton mills most of which are new and well-equipped. The production in the Madras province consists of Madras handkerchiefs, high class cotton coatings, bleached shirtings and drills and service khaki.

Long staple cotton requirements of Indian mills are met by importation from Egypt, East Africa, Sudan and U.S.A. In 1939 more than 5,40,000 bales (400 lbs. each) of foreign raw cotton entered India. At present there is no import of long staple cotton from Egypt because of the absence of any trade agreement. At present, Indian Union may import long-staple cotton from Pakistan to the extent of 1 million bales.

The development of Indian cotton mill industry has considerably affected the Lancashire cotton industry. Formerly, Lancashire had a strong hold on the market of India.

The entry of Japanese cotton piece-goods in India before the Second World War adversely affected the Indian industry, more particularly the Bombay cotton industry. *The Japanese manufactures had several advantages over their rivals in Bombay and in Lancashire.* The real strength of Japan as exporter of piece-goods rest largely on the ability of the small factories situated throughout the country to produce goods at a low cost. Many of the weavers in Japan are part-time farmers. Even the wives, mothers and elderly relatives of the farmers work in the mills. These operatives are satisfied with a very small remuneration.

Organised buying of raw cotton from America and India gave Japan some additional advantage. Total freight on both raw cotton and piece-goods, from India to Japan and back, was very low. State-aid to cotton industry in Japan was also a great contributing factor for its expansion.

Cotton twists and yarns and piece-goods of India are exported in large quantities to Burma, Straits Settlements, Syria, Aden, Siam, Iraq, Arabia, French Somaliland and other countries where Indian immigration is considerable. Bombay is the principal port for shipment.

There is still immense scope for further development of the industry. The market available at home is quite large and India has to import cotton goods even to this day. The total value of import exceeded Rs. 12 crores in 1938-39.

Since 1939 the cotton textile industry of India has been passing through a period of prosperity unparalleled in its history, due to the virtual elimination of all imports.

Many new types of cloth such as khaki cellular, shirting, cotton webbing of various description and jute cotton union canvas are manufactured.

PRODUCTION OF COTTON MANUFACTURES IN INDIA AFTER 1938-39.

Year	Million Yds.		
1938-39 4,270
1939-40 4,012
1940-41 4,270
1941-42 4,500
1942-43 4,029

The cotton production in 1942-43 was short by 470 millions compared to 1941-42. The imports of cotton piece-goods into India also fell from 650 to 13 million yards. During the same period, India exported 818 million yards to Egypt, Iran, Iraq and other countries. Thus since 1942-43, there has been an acute shortage of cloth in the country which could not be filled up by the production of hand-loom goods. All these factors have led to an enormous rise in prices of the cotton goods.

India can look forward confidently to a long period of post-war prosperity in the cotton textile industry, provided her

industrialists exercise enough forethought and bring about a reduction in manufacturing costs, so that she can compete with her potential rivals. India has already captured the cotton markets of Iran, Arabia, Iraq, Aden, Australia, New Zealand, South Africa, etc. As these are essentially *price markets*, Indian cotton industry must try to reduce its cost of production, so that when the normal trade will be resumed, the other countries may not drive out Indian cotton goods from these markets.

Pakistan is likely to be dependent for the supply of cotton piece-goods on the Indian Union to the extent of 500 million yards.

The Jute Mill Industry

The Indian jute industry is one of the biggest industries of the country and a prominent source of foreign exchange. The Jute industry owes its development to foreign enterprise. Till 1828, the manufacture of gunny bags and cloth was at the hands of the Bengal peasant weavers and the production was very small. But after 1832 when it was found that jute might be used as a substitute for hemp as a result of the experiment carried out by a Dundee merchant, the demand for jute increased. In course of time, the bleaching and dyeing processes improved and jute finally gained rapid popular favour. Thus the foundation of the jute manufacturing industry was laid in Calcutta and Dundee.

After cotton, jute is the most important industry in India. "In point of efficient organisation, the jute industry is perhaps second to none in India." The industry employs a daily average of nearly 3,00,000 workers.

Calcutta has the leadership in jute mill industry. Practically all the mills are in the neighbourhood of Calcutta on the banks of the Hooghly.

Although the Eastern Pakistan raises 75 per cent. of the raw jute of Undivided India, all the jute mills are now in the Indian Union. Therefore the Indian Union requires for her mills about 4 million bales of raw jute from Pakistan.

Provinces	Mills	Provinces	Mills
Bihar and Orissa	.. 3	United Provinces	.. 2
Madras ..	.. 4	West Bengal ..	.. 95

The localisation of jute mill industry in a small area on the banks of the Hooghly, near Calcutta, is due to the proximity to the raw material, the plentiful supply of cheap labour, moist climate, the nearness to the port of Calcutta and the navigability of the river.

The jute-mill workers are usually housed in dwellings provided by the mills at a nominal rent. These workers also enjoy free medical aid.

Jute manufactures may be divided into four classes : (a) gunny bags, used for packing rice, wheat, sugar, oil-seeds, etc.; (b) gunny cloth or hessians ; (c) coarse carpets and rugs ; and (d) cordage. Fine and clean jute yarn of uniform size and quality is used in the cable industry. The jute products are mainly exported to the U. K., Germany, France, Italy, Egypt, South Africa, Australia, Java, Japan, Argentina, Canada, the U. S. A., Cuba and the Netherlands.

The United States of America is at present the best customer for India's manufactured jute goods. They take about sixty per cent. in volume of the annual exports of hessian cloth. In value they take about thirty per cent. of the total exports of jute manufactures of all kinds. Argentina is the next largest customer for hessian cloth but it takes only one-third of those of the U.S.A. The United Kingdom takes about ten per cent. of the total exports of manufactured jute goods which include hessian cloth (ten per cent.), hessian bag (thirty per cent.), gunny bags, sacking cloth and sand bags. Australia takes a large quantity of sacking bags for wheat and wool. There is a considerable demand for twills in Egypt, the Levant, South America and South and West Africa.

The effect of the Second World War was not serious for manufactured jute trade since the continental Europe took less than five per cent. of the exports of manufactures.

Jute—raw and manufactured—represents 50 per cent. of the total exports of Indian merchandise from Calcutta to foreign countries. The jute trade, raw and manufactured, represents 20 to 25 per cent. of exports from the whole of India, the highest figure recorded being 28 per cent. in 1929.

The jute mill industry of Bengal received a great set-back after 1930. This was reflected in the exceedingly low level of prices of raw and manufactured jute. Trade depression

throughout the world and over-production of jute brought about the crisis. The introduction of substitutes and restrictions imposed on the free entry of jute in many countries aggravated the situation. In Cuba, Ecuador and the Netherlands restrictions were imposed on the free entry of jute products. In Germany, Rumania and Lithuania the restrictions took the form of regulation of imports by licence. Germany also prohibited the use of jute sacks for coal and wool. It was a part of the Italian industrial programme to substitute jute by home-grown fibre.

The displacement of jute in many foreign countries had developed along two lines: (a) the use of grain elevators and other mechanical appliances for the bulk handling of grain in countries like Australia, Canada and Argentina; (b) the substitution of jute bags by paper, cotton, sisal, hemp and other fibres. During World War II, when jute export was interrupted by the hostilities, many substitutes like cloth and paper bags became popular as packing materials and captured a part of the market. In other words, the progress of the jute substitutes was due to the scarcity of jute. New Zealand introduced *Phormium Tenax*—a vegetable fibre for domestic wool packing industry: Russia and Argentina used *linseed fibre*: Canada, U.S.A., Sweden, South Africa and Australia widely used *cloth and paper bags*. If some of these substitutes are being used even now, it is because of the high prices of jute in the post-war period.

The replacement of jute by processes of bulk handling is a permanent loss, but it is doubtful whether the substitutes of jute would compete ultimately with success. So long the price of jute is kept within reasonable limits, there is no possibility of its being ousted from the international market by the substitutes. The problem of jute substitutes may be real—but not serious.

Although India enjoys almost a monopoly of jute production, its demand in the market is influenced by the price factor.

The mill-owners realise that, although markets may have been lost to competitive fabrics or in countries which are more and more tending to self-sufficiency, other new and valuable markets may be gained by research and experiment.

The Indian Central Jute Committee has set up a laboratory for Technological Research at Calcutta for finding out the new uses of jute other than its employment as a packing material.

*The new lines of manufacture**

Housing : Heat insulation ; plastic furniture ; carpets and curtains ; upholstery ; blankets ; wall covering, etc.

Transport : Car upholstery ; water-proof covers ; tarpaulins ; canvas ; cordage and ropes.

Industry : Electric insulation ; plastic reinforcement.

Clothes : Mercerized and bleached fibres blending with wool and cotton.

In many of these new lines of manufacture, the jute industry has already made good progress.

The Sugar Industry

Although India is the accredited birth-place of sugar-cane she had to depend on foreign sources for supply of her requirements of sugar up to 1931-32. The sugar industry of India has developed considerably since the grant of tariff protection in 1932.† She has now become the largest sugar producing country in the world with an output far in excess of its present estimated annual requirements. There are more than 146 modern sugar factories in Indian Union.

The industry is mainly confined to the United Provinces and Bihar which might be regarded as the sugar-belt of India. The important sugar manufacturing centres in these two provinces are Kanpur, Gorakhpur, Lucknow, Allahabad, Champaran, Muzaffarpur and Bhagalpur. Other sugar centres are Coimbatore in Madras, Belapur in Bombay, and Amritsar in East Punjab.

PROVINCIAL DISTRIBUTION OF SUGAR FACTORIES (1940)

U. P.	..	..	..	72	Madras	..	..	..	7
Bihar	..	..	..	33	West Bengal	..	..	..	3
East Punjab	..	..	..	2	Orissa	..	..	..	2
Bombay	..	..	..	7	Indian States	..	..	..	11

* Barker—Jute Industry.

† The Government of India have decided to continue protection of the sugar industry up to 31st March 1950. The protection of the industry expired on March 31, 1949.

Production of sugar in India may be classified under three heads—(a) by modern factories working with cane, (b) by modern refineries working with *gur*, and (c) by indigenous pan concerns which may be collectively called *Khandsaris*. Of these three methods of sugar manufacture, it is only the first that gives what may properly be called the white sugar of India, and it constitutes the most important section of the industry. The *gur* refining industry as well as the *Khandsari* industry are very inefficient and wasteful. More than half the cane produced is used for the manufacture of *gur*.

The Indian Union produces 1·2 million tons of sugar as compared to 25,000 tons in Pakistan.

As a result of the rapid development of the industry, the import of sugar has now practically disappeared and the country has been rendered absolutely independent of any foreign sources for the supply of sugar.

Judged by the standard of quality and grade, Indian sugar is now equal to that of Java.

In spite of such remarkable progress, there are certain drawbacks in the industry. The present weakness of the Indian sugar industry lies in the high cost of production which is due to (a) seasonal character of the industry, (b) defective methods of extracting juice from the cane, (c) great waste in refining, (d) poor output, and (e) the impossibility in most cases of concentrating cultivation round the central factory. These defects may be removed. Both the Government and the industrialists should pay attention to research and modernisation.

In Java the factories for turning the cane into sugar are near the plantations and the process of manufacturing sugar is so developed that there is no loss of sucrose. Attention is also paid in Java to the production of by-products like rum and methylated spirit. The sugar factories in India have no control over the sugar-cane cultivation which is in the hands of ryots. These ryots possess small holdings of land and are not in a position to arrange for harvesting when the cane has reached maturity and is in the optimum condition. Moreover, in India sugar-cane areas are generally found at a great distance from the factories: as a result, the factories have to depend for their

supply of the raw material on remote areas and thus to pay high costs.

According to the terms of the International Sugar Conference of 1937, India was not to export sugar outside by sea for a period of 5 years ending in 1942. Till 1939 India did not feel the necessity of having foreign markets for sugar, because the entire production was required by the country. But the outbreak of war in 1939 made the *International Sugar Agreement* inoperative due to the restriction of imports and exports of sugar to and from belligerent countries, 'disturbances in the export quotas assigned to various European countries and violation of the terms of agreement by these European countries. At the same time, the sugar industry of India expanded so greatly that there was a large surplus of sugar available for export. India was therefore permitted to export sugar to the United Kingdom. When the war spread to the East Indies, Burma and Siam, and supplies of sugar were cut off from Java and the Philippines, "the sugar industry of India became the only major source of supply to the Empire countries not producing their own sugar."

The sugar market in India is extremely elastic. The present high price of sugar has kept the market confined mainly to the rich and the middle class people. A little reduction in the price will bring the produce within the financial capacity of the poor.*

The following figures will reveal the position of India as regards *per capita* sugar consumption in relation to other countries.

(in lb)

U. S. A.	..	103	Australia	..	..	114
U. K.	..	112	New Zealand	..	..	115
Denmark	..	128	India	..	..	24

* The Indian Tariff Board has recommended as a means of lowering the cost of production of sugar and expanding the industry: (1) shifting of factories in the U. P. and Bihar to more suitable localities; (2) allocation of sufficient funds to the *Indian Central Sugarcane Committee* for carrying out its five-year plan of research and development and (3) fixation of sugar prices at a fair and reasonable level.

At the current prices of sugar in Indian Union, the consumption cannot exceed 1 million tons which gives a surplus of about 150,000 tons a year. If the prices are reduced, the consumption will absorb this surplus. Sugar-cane accounts for 60 to 70 per cent of cost of sugar. Sugar-cane cannot be cheaper unless there is more production of it, which can only be done by increasing the yield of cane per acre. Any increase in the area of cultivation would conflict with the extension of areas under food or other crops which the country may need.

This reduction in price will also help the industry to export the surplus production to Afghanistan, Tibet, Nepal, Burma, Ceylon and Pakistan. Pakistan can take more than 350 million lbs. of sugar from the Indian Union. The European countries can also be supplied with Indian sugar now that India produces a superior quality and higher grades of sugar equal to that of Java.

The position of West Bengal in the production of sugar is at present not satisfactory. Bengal is a large sugar consuming province in India, but she has only three sugar factories.

The present is therefore the most opportune time for starting more sugar mills. West Bengal enjoys certain natural and economic advantages for the cultivation of sugar-cane. In the U. P. and Bihar, the production of sugar-cane per acre is between 15 and 16 tons, while in West Bengal it is as much as 35 tons, sometimes 40 tons. The soil and climate of North-West Bengal and 24-Parganas are favourable to sugar-cane cultivation. West Bengal has also the advantage of a large local consuming market; economy in railway freight charges on finished goods is also an additional advantage for her over the U. P. and Bihar.

As regards availability of cheaper power West Bengal stands in a very favourable position in comparison with the U. P. A very large coal-field lies near at hand and her excellent railway system and riverways bring this source of mechanical power at a cheap cost to the doors of the mills. But the great disadvantage of the Bengal sugar industry is that the port of Calcutta brings other sugar-producing countries within easy reach of Bengal markets.

Tea Plantations

India is the second largest tea-producing country in the world. About 80 per cent of the Indian tea is obtained from Assam and West Bengal. Southern India raises nearly 18 per cent. of the total output, the rest comes from East Punjab and Bihar.

There are more than 5,000 tea plantations in India, of which 50 per cent. is confined to the East Punjab and 20 per cent. to Assam. But the average size of a plantation in the Punjab is only 4 acres, whereas in Assam the average size exceeds 400 acres.

"Every garden of any importance has its own factories where tea is prepared for the market, as it is essential that the various processes should be carried through immediately after the leaf has been plucked. The better organised factories are elaborately equipped with highly specialised plant and are under the supervision of expert tea makers."

The Indian tea industry employs more than a million labourers, recruited mostly from the United Provinces, Bihar, Central Provinces, Madras and Orissa. Assam employs in the tea plantations more than half a million persons; in West Bengal the number is a little above 200,000. The question of labour is a difficult problem in Assam, where the local labour is generally unwilling to work in the plantations, because it finds in the cultivation of land a more easy occupation. Labour is employed in Assam on a contract system—the workers agreeing to remain at a stretch for certain years in a garden.

Internal consumption of tea absorbs about 25 per cent. of the production, while the rest is available for export. The U. K., Canada, Australia, Egypt, the U. S. A., France and New Zealand are the chief buyers. The U. K. is the single largest buyer and takes as much as 60 per cent. of the export. It is probably true to say that no other country in the world is so dependent on one consuming country for its prosperity. Although India is the greatest tea exporting country in the world, several other countries like Ceylon, Java, Sumatra, China, Japan, Formosa and French Indo-China produce tea and compete with India in European and American markets.

There is however great scope for the expansion of Indian tea in Iran, Egypt and the U. S. S. R.

PERCENTAGE OF INDIAN TEA IN THE TOTAL IMPORTS OF
CERTAIN IMPORTANT COUNTRIES

		1936	1937
U. K.	...	55 8	56·5
Canada	...	55 1	55 8
U. S. A.	...	14·9	10·7
France	..	6 1	7·6
Australia	...	4 9	2 4
New Zealand	...	2 3	3 0

It is evident from the above figures that the competition is severe in the U. S. A., France, Australia and New Zealand.

Therefore it is necessary to develop the internal market, and fortunately there is great scope for such development. *The Indian Tea Market Expansion Board* is carrying on extensive propaganda throughout India, as a result of which the demand for tea has increased considerably.* The Board claims that in Madras and Bombay more than 60 per cent. of the former drinkers *has become regular visitors to the tea shops*. The Board spends more than Rs 20 lakhs on propaganda work in India.

The tea industry has had a continuous run of prosperity throughout the war years 1939-1945 as the supplies of Netherland East Indies tea were cut off from the world market. The International Tea Committee had to raise the export quota of tea from India.

PRODUCTION OF TEA

Year			Million lbs
1938-39	...	...	.. 452
1940-41	...	...	... 463
1941-42	.	...	... 470
1943-44	...	..	.. 573
1947-48	..	...	.. 532

* "The old Indian Tea Cess Committee is now defunct and its place has been taken by the Indian Tea Market Expansion Board, a branch of the International Tea Market Expansion Board. The intensive advertising campaigns initiated by the Board have already borne fruit in several countries, and apart from India and the United Kingdom itself, the potential markets in America, Egypt and South Africa offer a vast field for operations."

In 1948, tea production in Indian Union was 540 million lbs. compared to world's total of 815 million lbs. In the same year the world demand for tea was to the extent of 848 million lbs. Hence the supply is still short of demand. Recently the Government of India has levied an export duty of As. 4 per lb. of tea. Till the production of tea is revived in Indonesia, Japan and Formosa, the export duty will not effect the tea trade.

There has been a large increase of export of tea to Canada, U. S. A. and Australia from Indian Union.

The present problems of the Indian tea industry are (a) the acute shortage of chemical fertilizers, (b) shortage of plywood tea chests and (c) the deterioration in the quality of tea. Further progress of the tea industry will depend on the solution of these problems. It is also necessary to make more propaganda for Indian tea in foreign markets. Indian Tea is losing grounds in U.S. markets because of its deterioration in quality and growing competition from other sources. As tea is a good *dollar earner*, it is necessary to give immediate attention to this problem.

The partition of the country has given rise to new problems in regard to transport resulting in high costs. Calcutta's railway link with the tea gardens run through Pakistan territory and coal supplies now has to be sent through a new route involving motor transport over difficult hill roads. This adds to the cost of manufacture. Moreover, coal stocks are not adequate and therefore wood has to be collected on a large scale to supplement fuel supplies.

The Silk Industry

The Indian silk industry was once in a very flourishing condition. The industry declined as the result of the competition of the silk yarn and silk piece-goods from Italy and Japan. In more recent years Chinese silk and artificial silk manufactures are competing severely with the silk weaving and spinning industry of India.

India is a great raw silk producer. Various silkworms are reared in different parts of the country. The varieties are the mulberry silk, *tasar* silk, *endi* and *muga*.

There are three principal areas where raw silk is found : (i) Southern portion of the Mysore plateau with the Coimbatore district of Madras, (ii) the Murshidabad, Malda and Birbhum districts of Madras, (iii) Kashmir and Jammu with the neighbouring districts of the East Punjab. There is also a considerable cultivation in Chota Nagpur and Orissa and parts of the Central Provinces of the *Tasar* silkworm and in Assam of the *Endi* and *Muga* silkworm. Silk is also obtained from North Bihar. Kashmir is the most important producer of silk in India where silkworms thrive best in the mulberry trees. Silk industry is a State monopoly there and the major portion of the products is exported to Europe.

The silk industry of India is an important national asset with strongly marked characteristics. It consists of two well-defined sections :

- (1) The production of cocoons ; and
- (2) The production of raw silk, including the utilization of by-products.

The first one is essentially a cottage industry, and the second is a factory industry.

SILK-PRODUCING AREAS IN INDIA

Name of area	Silk reeled lbs	Name of area	Silk reeled lbs.
Mulberry Silk :		Tasar Silk :	
Bengal ..	.. 10,00,000	Bihar & Orissa ..	2,40,000
Mysore ..	.. 7,40,000	C. P. ..	1,60,000
Kashmir ..	.. 2,32,000	U P. ..	1,000
Madras ..	.. 90,000	Total ..	4,01,000
Assam ..	.. 6,400	Other Silk :	
Punjab ..	.. 1,000	Assam Muga ..	1,00,000
		Assam Endi ..	50,000
Total ..	20,69,400	Grand Total ..	26,20,400

Silk manufacture is a cottage industry in India. The bulk of the raw silk produced in India is consumed by the hand-

loom weaving industry. Although there are 90 silk factories in Indian Union, at present only three mills use power-driven looms for silk manufactures—one in Bengal, one in Mysore and one in Bombay.

The chief silk-weaving centres are Amritsar and Jullundhar in East Punjab ; Benares, Mirzapur and Shahjahanpur in the U. P. ; Murshidabad, Bankura and Bishnupur in West Bengal ; Nagpur in C. P. ; Bhagalpur in Bihar ; Ahmedabad, Poona, Belgaum, Dharwar, Hubli and Sholapur in Bombay ; Bangalore in Mysore State ; Berhampur, Trichinopoly, Salem and Tanjore in Madras ; Srinagar in Kashmir.

Mysore silk industry produces more than two-fifths of the total output of silk manufactures in India.

In order to improve the condition of the silk industry in India it is necessary to ask for State support. The silk weavers are all poor and therefore cannot buy the necessary implements. They are also exploited by middlemen. These evils can be removed to a certain extent through co-operative societies.

Though India is a large producer of silk, she has not been able to capture any foreign market. France and the United Kingdom import small quantities of raw silk. India exports cocoons, because reeling is so badly done that foreign countries prefer to do the reeling themselves.

Rayon* or staple fibre is produced from wood-pulp by forcing viscose through minute holes to form filaments which are cut into short lengths or staples which can be spun on ordinary cotton machinery after a little adjustment.

The present condition : India imports a large quantity of artificial silk from Italy, Japan, the U. K., France and other countries. In 1938 India consumed artificial silk to the value of Rs. 487 lakhs. The great demand for silk on the one hand, and the absence of any artificial silk industry in India on the other, indicate great possibilities. The necessary raw materials for artificial silk are available in India

The Dehra Dun Forest Research Institute has observed that rayon can be manufactured in India from "fibro," a product

* It is the generic term for manufactured textile fibre or yarn produced chemically from cellulose.

obtained from grass and bamboo pulps. The forest wealth of Travancore and Mettur can be used for the manufacture of "fibro" with the help of cheap power obtained from the Pallivasal Hydro-electric Project. Moreover, in India large quantities of cotton and cotton waste are available, and this can be used in the artificial silk industry. "The percentage of yield of artificial silk from cotton is far greater than that from wood-pulp; wood-pulp yields 30 per cent. and cotton 85 per cent." The chemicals required are caustic soda, carbon disulphide, ammonium sulphate, white soap, bleaching liquid, etc., which are mostly available in India. As plentiful supply of water free from chlorides is necessary, the industry should be localised on river banks having transport facilities.

The Woollen Industry. Indian wool is known in the world market as "*East India Wools*". There are about 50 million sheep in India which are reared mostly in Northern India. The annual wool production is nearly 85 million lbs. Indian wool is short stapled and is inferior to that of Europe and Australia. Raw wool is obtained from the Punjab, particularly the Hissar district; Garhwal, Almora and Nainital in the U. P.; and Bikanir. There are twenty two woollen mills in the Union. In addition, there is a large number of handloom producers. The first woollen mills were set up about 1876 at Kanpur and Dhariwal because of availability of cheap labour and water supply.

Indian wool is suitable for the manufacture of carpets and blankets which are made at Amritsar, Srinagar, Bangalore, Agra, Mirzapore and Kanpur. Shawl is a cottage industry product of Kashmir. The finest wool comes from the Bikanir State and is used in the mills. Modern mills are mostly localised in Dhariwal and Kanpur.

For manufacture of woollen cloths in the few mills established in India wool is chiefly imported from Australia. The average annual imports of raw wool is of the order of 19.24 million lbs.

If proper care is taken to improve the sheep-breeding and to produce better and cleaner type of wool Indian Union can possibly become less dependent on foreign supplies.

The utilization of wool by Indian mills may be classified as follows :

- (a) Indian plain wools—
 - (i) Coarse type : Blankets and carpets.
 - (ii) Finer types : Tweed, 'overcoatings, rugs, serge yarn.
- (b) Hill types—low grade hosiery and army blankets.
- (c) Cross-bred wools—Medium serve warps, worsted warps, tweeds etc.
- (d) Merino wools—Flannel, overcoating and superfine broad cloths

A serious handicap from which the Indian woollen industry suffers is the fact that the season for wearing woollen cloths in India is about 4 months in a year, and the mills are to manufacture for many months in anticipation of a demand which may not be realised.

The woollen manufacturers of India have formed a Federation to avoid rivalry and competition among themselves. This federation is known as the Federation of Woollen Manufacturers in India.

•

The Iron and Steel Industry

Indian Union is the second leading iron and steel producing country in the British Commonwealth of Nations, and yields place only to the United Kingdom. Although her output of iron ore cannot be compared with that of the U. S. A. and France, her reserves of ore are so vast that there is every hope that India will eventually take an important place among the producers of iron goods. The principal iron-ore deposits are found in Bihar, Orissa, Central Provinces, Mysore and Madras. The most important iron belt extends from Gurumahisan in the Mayurbhanj State of Orissa through Keonjhar and Bonai to the Kalhan sub-division of Singhbhum. "Most valuable deposits occur in the chain of hills extending over 30 miles from Kompilai in the Bonai State to the neighbourhood of Gua in the Singhbhum district as in this area we get above 60 per cent. of the total deposits of this belt".

•

The value of an iron-ore deposit depends not only upon its richness in iron, but also upon its location and the ease or difficulty of mining. In India the various other metallic ores required in extracting iron from the ore are also available in abundance not far from the iron deposits. Manganese ore, for example, occurs in the Singhbhum district. Again, dolomite and limestone are found within a short distance of the ore-fields.

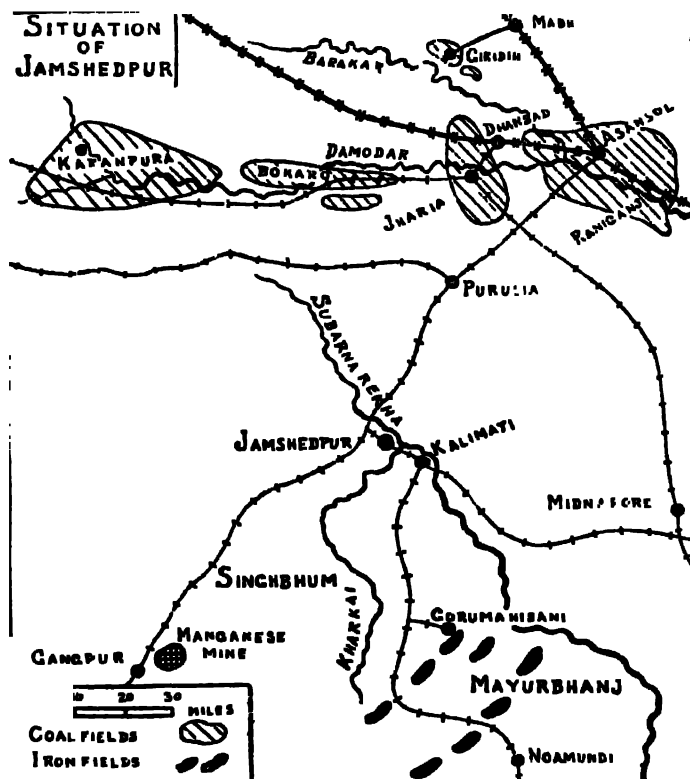


FIG. NO 112 Notice the coal-fields in the north and the iron-fields in the south-east of Jamshepur.

The iron and steel industry is now recognised as one of the biggest industries in India. It gives employment to nearly 35,000 persons. The first iron and steel company was started in 1830, but the real development began after 1908 when the Tata Company was established at Sakchi in the Singhbhum

district. At present the companies chiefly engaged in the making of iron and steel are the following :

- (a) Tata Iron and Steel Co., Ltd.—It owns valuable iron-ore concessions in the Mayurbhanj State of Orissa and the Raipur district of the Central Provinces, magnesite and chromite in Mysore and coal in the Jharia field.
- (b) Bengal Iron Co., Ltd., at Hirapur brings iron-ore from Pansira, Ajita and Maclettan mines.
- (c) Indian Iron and Steel Co., Ltd.—It manufactures pig iron, steel, ferro-manganese, etc., at Burnpur, near Asansol, 130 miles from Calcutta.
- (d) United Steel Corporation of Asia brings iron from Keonjhar mines. The centre is at Monoharpur.
- (e) Mysore Iron-works at Bhadravati.

It is not possible now for India to produce machinery, higher grade of cutlery, high-grade steel and rolling stock. She manufactures mainly pig iron, iron bars, steel tubes, tin plate, enamel wares, wires, nails, railway wagons, etc. The Indian iron and steel industries are enjoying fiscal protection as manufacturers of basic materials.

India exports a large quantity of pig iron and steel manufactures. The bulk of the shipment goes from Calcutta. Madras also handles a considerable quantity. The chief markets for pig iron are the U. K., the U. S. A., Japan and China, while scrap iron and steel for remanufacture go mainly to the U. K. and Japan.

PRODUCTION OF IRON AND STEEL IN INDIA

(in 000 tons)

			1938-39	1939-40
Pig iron	..	..	1,576	1,838
Casting	..	..	88	128
Steel ingots	..	..	977	1,070
Semis	..	..	791	872
Finished steel	..	..	726	804

Jamshedpur, the centre of the Tata Iron and Steel Company, is the principal seat for the manufacture of steel in India. It owns valuable iron-ore concessions at Gurumahisani, only 50 miles away. Coal is brought from the Jharia field, the distance being only 100 miles. Limestone and dolomite are obtained from the neighbourhood. The centre is connected by railways and the cost of transportation is never high. Cheap labour is always available from the Central Provinces and Chota Nagpur. The river Subarnarekha, though useless for navigation, supplies water to the industry. During summer this river dries up and therefore arrangements have been made to preserve water in the Kharkai river by constructing a dam.

PRODUCTION IN TATA IRON AND STEEL COMPANY

(in 000 tons)

			1947	1948
Coke	..	...	933	960
Pig iron	..	..	956	1075
Steel ingots	...	...	901	1029
Steel goods	..	..	664	753

The Bengal-Nagpur Railway, with its branch lines, serves the industrial city for moving the raw materials and the finished products.

Burnpur is the second largest iron and steel centre in India. The city is 142 miles from Calcutta and the industry is managed by the Indian Iron and Steel Corporation Ltd. In 1936 the Bengal Iron Co., Ltd. was amalgamated with it. The output of the pig iron of the amalgamated companies in 1937 was 7,13,000 tons. The companies also manufacture foundry iron for castings.

In Mysore the iron-ore deposits exist in the Bababudan hills and in the Shimoga district. The iron industry is localised at *Bhadravati*. The forests of the Shimoga and Kadur districts supply charcoal for smelting iron ore. Limestone comes from Bhandigudda.

The prospects of setting up of an iron and steel industry

in Madras are bright. The province has got in the districts of Salem and Trichinopoly an almost inexhaustible reserve of high grade iron ore and other accessory ores required for the industry. The deficiency of coal is no doubt an impediment, but then charcoal is available, and also hydro-electric energy. The auxiliary materials required for the iron and steel industry are fluxes and refractories. Both limestone and dolomite are available in Salem district itself, as also in Trichinopoly and Coimbatore districts, while refractories, fire clay, magnesite, chromite and Siliceous materials, are found near iron ore deposits.

The Second World War brought a run of continuous prosperity for the iron and steel industry. The industry has now doubled its pre-war output of finished steel. A large variety of special steel like special bar for the manufacture of shells, a bullet proof armour plate, gun turrets, high grade steel machine tools and stainless steel for surgical instruments are being manufactured. The consumption of pig-iron, ingots, bullets, tin bar and tin-plate are controlled in regard to civilian population.

"The future outlook for the Indian iron and steel industry is bright. The immense natural resources of the country, particularly in comparison with those of some other eastern lands, its position of easy accessibility to the markets of the Indian and Pacific Oceans, the proved metallurgical skill of its iron masters and steel founders, and the commercial ability already displayed in the development of the export trade in pig iron—these, together with the great potential and growing home market for steel goods of every description, all presage expansion when world commerce returns to its normal channels."

Paper-Making in India

The manufacture of machine-made paper in India dates from 1867 when the first mill was established on the Hooghly. At present there are fifteen mills in Indian Union.

Calcutta with its neighbourhood is the principal centre of the paper industry in Indian Union. The other centres are Lucknow, Bombay, Punalur (Travancore), Saharanpore and Poona.

NUMBER OF PAPER MILLS AND THEIR CENTRES

Provinces	No. of mills	Centres
West Bengal	4	Kankinara, Titagarh, Ranigunj & Naihati.
Bombay	3	Bombay, Poona and Ahmedabad.
United Provinces ..	2	Lucknow, Saharanpur.
Bihar ..		Dalmanagar.
Orissa ..		Brajrajnagar.
East Punjab		Jagadhri.
Mysore		Bhadravati.
Travancore		Punalur.
Hyderabad		Sirpur.

The paper industry gives employment to more than 10,000 people. Pulp is mostly imported from foreign countries. Wood-pulp is not available in sufficient quantity. In Europe and America, coniferous wood is used for pulp. In India forests of coniferous trees—pine, spruce and fir—are available in the Himalayas, but then it is not possible to export them commercially on account of the lack of transport facilities. There are possibilities, however, for using pine wood of the Kashmir State for the manufacture of pulp. The Dehra Dun Forest Research Institute is making experiments with Bagasee. Sabai grass, which grows abundantly in Northern India, is now used for making pulp in the Punjab and U. P. For cheaper varieties, rag, hemp, jute waste and waste paper are used. Bamboo pulp is used only in Naihati, Bengal.

The supplies of bamboo in areas where the other conditions are favourable for exploitation are sufficient to meet the needs of all the paper mills in India and leave a surplus from which an export trade in pulp can be developed. It grows extensively in Assam, Madras and Bombay. The advantage of bamboo is that the cutting rotation is on average four years as against 60 years in the case of wood. Further, the dead bamboo stems remain suitable for the manufacture of pulp for at least 4 years. Its yield is larger than sabai grass and cost cheaper. Of course, as a raw material, bamboo is inferior to sabai grass; but, in India, the demand for superior quality paper is limited. The prospect of the bamboo paper-pulp industry is, therefore, quite bright.

The paper industry of India is working under certain disadvantages. The necessary chemicals, like caustic soda, soda ash, salt cake, bleaching powder and dyes, are to be imported from abroad at high price. Moreover, these chemicals are to be brought to the mill-centres from the ports, and the transport charges are heavy. The problem of power is no less acute. Most of the mills are to pay heavy charges for coal as the best coalfields are mostly confined to the Damodar basin of Bihar-Bengal. The total quantity of paper of all kinds imported by India before the war was 25 million cwts. The question of foreign competition, however, need not be taken seriously. Norway and Sweden can never afford to dump paper into India as these countries manufacture paper mostly for foreign markets. Dumping is possible when the domestic consumption is adequate enough to make good the loss.

It is not possible to make newsprint in India with grass or bamboo-pulp. Expensive rag papers, art paper, blue match paper, tissue paper, etc. are not likely to be made in India in near future. A newsprint factory is being set up in Central Provinces. Other ideal places for the location of mills for the manufacture of newsprint are Kashmir, Hyderabad and Tehri Garhwal State.

THE PERCENTAGE SHARE OF THE PRINCIPAL COUNTRIES IN THE
TOTAL VALUE OF PAPER IMPORTED IN INDIA

1938-39

		<i>Per cent</i>			<i>Per cent.</i>
U. K. .	..	.. 27 6	Germany	..	.. 19·7
Norway	..	.. 11 6	Japan	..	.. 4·1
Sweden	..	.. 12·0	Netherlands	..	.. 4·7

With the outbreak of the Second World War, imports from these countries ceased and Indian paper-mill industry got an excellent opportunity of expanding and consolidating its position. The growth of the paper industry in India will be evident from the following figures :

Paper production (in 000 cwt) in India

1932-33	..	.. 804	1939-40	..	.. 1,369
1936-37	..	.. 971			
1938-39	..	.. 1,183	1941-42	..	.. 1,600

Although the paper industry has increased its production considerably, the output is yet not adequate enough to meet the requirements of the country. The demand has also increased for hand-made paper.

It is expected that in course of time, Indian paper industry will supply the entire requirement of India, and will also be in a position to export paper outside. The possibilities of export are in the direction of Burma, Ceylon, Malaya and East Africa where at present there are no paper mills.

Chemical Industry

The Indian Union has now 35 chemical factories. The chemical industry has achieved enormous progress during the last few years. The range of manufactured products has greatly increased, and besides factories of basic products, raw materials for agriculture and industry, the Indian Chemical industry manufactures many articles for direct consumption.

Chemical industry supplies materials which are used in other industries or agriculture. The production of soap, leather, glass, paints and varnish, drugs, rubber, etc., requires chemicals without which they cannot be manufactured.

The chemical industry can be divided into :

- (a) Heavy chemicals.
- (b) Coal tar chemicals.
- (c) Electro-chemicals.

Heavy chemicals include mainly sulphur and its compound, acid hydrochloric, soda ash, caustic soda and fertilizers. The importance of heavy chemicals lies in the fact of their being essential for other industries like textiles, leather, paper etc., and their consumption depends on the activity of those industries.

The second World War was responsible for the birth of a heavy chemical industry in India. At present several types of heavy chemicals are manufactured in Bombay, Calcutta, Delhi, Kanpur, Amritsar, Madras and Bangalore, but the production is not sufficient to meet the requirement of the country. India's sources of raw materials for heavy chemicals are not deficient if only the various mineral ores are properly treated. Salt, lime-

stone, gypsum, bauxite, zircon, ilmenite, beryl, monazite, kaolin, etc., are found in abundance. In regard to fuel, the problem is very serious, because except Bengal, cheap coal is not available in other centres like Delhi, Madras, Bombay and Bangalore. The present hydro-electric schemes of the South need further expansion for supplying cheap electric power. The chemical plants which are regarded as essential for building chemical industries, are not made in India, but if proper attempts are made, much of the simpler plants could be locally manufactured.

Coal tar is the foundation of the organic chemical industry from which benzole, anthracene and anthracene oil are obtained for use in dyes, explosives, flavouring essences, perfumes, plastics, pharmaceutical and photographic chemicals. Coal tar production and its distillation are centralised in Calcutta, Kulti, Jamshedpur, Bombay, Jharia and Hirapur. The Electro-chemical industry is of recent origin in India. Among the many products, the chief are calcium carbide, aluminium, magnesium and ferro-manganese. In many of these industries, electrical energy forms the major portion of the cost of the product, success or otherwise of the industry being largely dependent on the rate at which power is made available to the industry. With the completion of Hydro-electric projects now under construction, abundant power will become available and it will be possible to establish many electro-chemical industries in Bengal, Bombay, Madras, Bihar, Mysore and U. P.

In 1938-39 India imported chemicals to the value of Rs. 3 crores. The imported chemicals consist of sodium compounds, sodium carbonate, caustic soda, acids, potassium compounds, sulphur, bleaching powder and glycerine.

SHARES OF THE PRINCIPAL SUPPLYING COUNTRIES IN THE TOTAL IMPORTS OF CHEMICALS IN INDIA.

1938-39					
<i>Per cent.</i>			<i>Per cent.</i>		
U. K. ..	..	.. 56.5	Italy	..	.. 5.2
Germany	..	.. 13.1			
U. S. A.	..	.. 6.5	Japan	..	.. 5.2

Glass Industry

Glass manufacture has been known in India since time immemorial, but it assumed the character of a modern industry with the outbreak of the war of 1914-18, when Indian manufacturers made considerable efforts to fill the partial void created by the stoppage of imports from Czechoslovakia, Belgium, England and Germany.

It has a wide geographical distribution in India. There are seventy-seven glass factories scattered all over the country giving employment to more than ten thousand people. Though it is a very old industry, its development has been comparatively very tardy.

The industry is carried on under two systems: (a) the indigenous cottage industry, and (b) the modern factory industry.

The indigenous glass industry is spread all over India, but the chief areas are the Firozabad district of the United Provinces and the Belgaum district of Bombay. Similar types of cottage industry also exist in Mysore. The indigenous glass industry had to face competition from the factory industry which started manufacturing the rough type of bangles in competition. On the top of this, the competition from Japanese manufactures in bangles and other ornamental types was there. As a result the cottage industry is today restricted to the rough products and on smaller scale.

The modern factory industry is more or less restricted to the production of the following classes of goods:

- (1) Glass cakes for bangles.
- (2) Beads, bottles, lampware, phials, table ware, etc.
- (3) Sheets and plate glass on a limited scale.
- (4) Surgical and laboratory requirements in glass in special cases.

The United Provinces, Bombay and Bengal are the three main provinces for glass factories.

Glass industry has developed to a considerable extent in the United Provinces, where about 50 factories manufacture bangles, hollow and pressed wares, glass sheets, etc. *Bahjoi* in the district of Moradabad is the only glass sheet making

centre in India. Bangles are mostly made at Firozabad. It supplies nearly one-third of the country's demand. Hollow and pressed wares like motor head-lights, reflectors, bulb, chimneys, etc., are produced in Shikohabad, Hathras, Naini and Bahjoi. The factors that led to the success of the glass industry are the availability of sand, potash, nitrate and lime in the province itself. Coal is imported from Bihar and Bengal. There are, however, certain drawbacks in the glass industry of U. P. The designs of bangles and glasswares are all old-fashioned and are mostly imitations of the Japanese brand or Moradabad brass-wares. The industry is in the hand of small dealers, and as such it is not properly organised.

Lamp wares, bottles, glass tubes, flasks, beakers, test tubes, plate glass, etc., are mostly made in Bengal and Bombay. In 1943 there were 12 glass factories in Bombay, employing about 4500 workers.

The future of the glass industry is indeed bright. The home market is fairly large and many of the raw materials are found in large quantities. The Indian glass industry is in a position to export glass and glassware to foreign countries. In 1939-40 she exported to the extent of Rs 2 lakhs worth of glasswares to Aden, Bahrein Island, Ceylon, Burma, Federated Malay States, Arabia, Iran, Japan and other countries.

Aluminium Industry

India possesses large reserves of bauxite suitable for the manufacture of aluminium.

Aluminium has recently assumed great importance as a metal because of its lightness, corrosion resistance, electrical conductivity and ease of fabrication. The metal is used in transport, chemical, brewery and food industries, building and architecture, insulation and paints. The aircraft industry is entirely dependent on the use of aluminium alloys. The metal is also used for bus bodies and railway coaches. Aluminium vessels are much more suitable for use in the kitchen than those of other metals. Aluminium containers are also replacing containers of tin plates.

The Indian Aluminium industry is located at *Alwaye in Travancore, Belur and Asansol in West Bengal and Muree in*

Bihar. The annual production is about 4000 tons. The cost of production is very high. The imported metal, however, does not very much compete with Indian production. India imports annually about 7000 tons of aluminium goods.

Leather Industry

Indian leather industry can be divided into two categories —(a) indigenous and (b) modern.

The indigenous process is employed for crude leather, sole leather and half tanned leather. A varam or turwar bark (*Caussia Auriculate*) is generally used for tanning though the use of wattlc bark is not uncommon in Madras. The indigenous tanning is done by the *Chamars*.

Modern tanning uses *babul* bark and myrobalans in dealing with hides. Such processes have been introduced in Kanpur, Agra, Calcutta, Delhi and Madras. Batanagar, near Calcutta, makes footwears on a large scale. Chrome process has been recently introduced in India and Madras has done much pioneering work in this direction.

Hides (the skins of the larger animals) and skins (the skins of the smaller animals) are the chief raw materials, of leather industry. India is the world's major supplier of raw and half-tanned hides and skins. She produces annually about 20 million cattle and 3½ million buffalo hides, 22 million goat and kid skins and 3 million sheepskins. In the production of cattle hides, India stands first in the world.

About 60 per cent. of the raw hides and 40 per cent. of the goat and sheepskins are tanned in India and the remainder is exported raw. In 1939-40 India exported raw hides and skins worth Rs. 412 lakhs, while exports of half-tanned leather were worth Rs. 600 lakhs. The United Kingdom alone takes about 50 per cent. of the Indian exports of hides and skins, the U. S. A. coming second with about 30 per cent.

India supplies about 30 per cent. of the goatskins of the world. The Indian goatskins is considered as the best raw material for high class kid. In 1938 India exported glace kid worth about Rs. 10 lakhs.

The term *tanning* is generally used to cover a variety of processes which convert hides and skins into leather. The

principal tanning materials are (a) vegetable tanning materials, (b) mineral tanning agents, (c) oils. Vegetable tanning materials are obtained by water extraction of certain parts of various plants which contain water soluble known as tannin or tannic acid. The parts used may be wood, bark, leaves or form of fruit. Aluminium and chromium are the chief mineral tanning agents. Aluminium is used with fatty matters such as egg-yolk, olive oil and the gluten of flour. The chromium is used in the form of chromium sulphate. For heavy leather tanning, cod, herring, seal or whale oil is used.

During the Second World War the industry received considerable fillip due to large military demand for boots and shoes, harness, saddlery and other army equipment. The United Provinces was the largest producer of army boots and shoes in the British Empire. From the pre-war production of 40 lakhs pairs of shoes in 1938-39, the country during war produced more than 85 lakhs pairs of shoes. The output of harness, saddlery and others can be valued at Rs. 22 crores a year. The output of leather increased by more than seven times. Such a large increase in the supply of leather was made possible by the increased slaughter of cattle to provide meat for the defence forces. This increased slaughter of animals brought in its wake the problem of scarcity of milk supply in urban towns. The export of lamb and kid for skins is an interesting development of recent years. In future, India's fur-skins will play a very useful part in international commerce.

The Ship-building Industry

The sea-borne and coastal trade of India is very large and is at present controlled by foreign companies. The over-sea trade is more than 25 million tons of cargo and a quarter million passengers, and when measured in terms of rupees, it exceeds Rs. 4,000 million. The coastal trade of India is over 7 million tons of cargo and 2 million passenger-traffic. Such a huge trade requires a large mercantile marine. Moreover, India is surrounded by seas on three sides and therefore she should have her own ships for the defence of her coasts.

In 1938-39, the share of Indian shipping was 2 per cent in oversea trade and 21 per cent in the coastal trade. The number of Indian steamers in service were only 63.

The necessary requisites for the ship-building industry are :

- (i) Ship-building and repairing yards,
- (ii) Deep water in the harbour.
- (iii) Proximity of raw materials,
- (iv) Supply of labour.

In Calcutta and Vizagapatam there are already certain repairing yards for making hulls and lighter crafts. Calcutta also boasts of a few dry docks. The Gondwana coalfields are connected by railways with Calcutta and Vizagapatam. Though India is fairly rich in iron ore and there are four important steel manufacturing centres in India which can supply ship-building materials, yet in the initial stage, engines, propellers and other machinery will have to be imported from abroad.

The Scindhia Steam Navigation Company has very recently opened a ship-building yard at Vizagapatam. *It is interesting to examine the suitability of Vizagapatam as a ship-building centre.* The situation of the harbour at the centre of the eastern coast between Calcutta and Madras offers great facilities for bringing down the necessary materials from the hinterland of those two big ports. Vizagapatam has the additional advantage of possessing a deep-water harbour which permits the launching of big ships. The tidal range is also satisfactory. Steel, the most important raw material, can be brought to the shipping yard from Tatanagar, 550 miles away, by the B. N. Rly. The Gondwana coalfields are also within easy reach. Timber necessary for making decks, cabins, etc., can be had from Chota Nagpur. If railway lines are constructed to connect Waltair with the actual shipyard, the cost of transport in bringing raw materials will be further reduced. Supply of skilled labour, though at present scanty, may be requisitioned from outside in the beginning.

The building of medium-sized ocean-going vessels has already begun at Vizagapatam. In 1948 one 8,000 tonner was turned out from this yard.

The other major ports of India, like Bombay and Madras, cannot conveniently develop the ship-building industry. Bombay is many hundred miles away from the coal and iron fields. The harbour of Madras is artificial and the sea is shallow. Therefore big sea-going steamers cannot be launched.

Recently a small ship-building yard project has been launched near *Khatkal* in Bombay Presidency.

Aircraft Manufacture

Although as late as September, 1939, the Government of India turned down the scheme of the Scindhia Steam Navigation Company for the manufacture of aircrafts in India as "impossible", as a result of the changing course of the war, the Government declared in 1940 that "it was Government's intention to proceed with the scheme as soon as the necessary plants and materials became available." An aircraft factory was floated in Bangalore in 1941. This factory has now been taken over by the Government and is engaged in the repairing and production of aeroplanes.

The possibilities of an aircraft industry in India are very promising. Apart from the requirements of military aircraft, India with its long distances and excellent visibility has vast possibilities of civil aviation.

The Indian Union has now 41 air services routes covering 13,295 route miles. There are now 16 daily services and 42 weekly services. In the second half of 1947, the civil aviation covered 4,648,155 miles and carried 136,806 passengers and 1120 tons of goods in addition to 298 tons of mails.

In the initial stage of its development, the Government should help the industry to procure machinery and raw materials from abroad and also ensure a certain market by placing substantial orders. The Government of Indian Union have announced recently that they have decided to establish an aircraft industry in India for building aircrafts needed for the Indian Air Force and civil aviation.

Bangalore, in Mysore State, is an ideal place for aircraft manufacture. The advantages of this centre are the availability of cheap electric power, equable climate, central situation and remoteness from the sea coast, existence of the Science Institute and the proximity of an iron factory. Jamsedpore is also a potential site for the manufacture of aircrafts.

Automobile Industry

There are fair prospects for the development of an automobile industry in India. The average annual import of motor

cars, cycles, omnibuses and parts exceeds Rs. 4½ crores. The estimated number of vehicles in use in India is 1,85,000 as compared with 30 millions in the U. S. A., 2½ millions in the U. K., 2 millions in France and 1½ millions in Canada.

**AVERAGE NUMBER OF PERSONS SERVED BY ONE MOTOR CAR
IN SOME COUNTRIES**

U. S. A. ..	..	..	4	France ..	..	..	18
Canada ..	..	..	8				
U. K. ..	..	..	18	India ..	..	..	1900

Recently a company has been floated in Bombay with a scheme for manufacturing automobiles in India.* It should be noted that in the initial stage the industry will require Government help and patronage. The sites of the industry may be at Burnpore, Jamshedpur and Calcutta which, besides being near or in the heart of iron areas, can conveniently use imported machines and parts. As these three centres are already noted for engineering industries, the supply of trained labour and various parts for the automobile industry will be available.

Essentially the automobile industry is a component construction and assembly business. So, India need not produce all the parts and accessories used in building up automobiles. Nowhere in the world an automobile manufacturing plant is self-sufficient in every way. . . . India too while manufacturing most of the parts necessary can import some parts and there need be no qualms about them.

Lac Industry

The name 'lac' is derived from the sanskrit word "Laksha" meaning hundred thousand referring no doubt to the innumerable insects that take part in secreting resin.

Lac is virtually a monopoly of India and is grown chiefly in Chota Nagpur, Orissa and the Central Province. These areas produce about 85 per cent. of the total production, Chota Nagpur

* The promoters of the company have entered into a contract with one of the leading American automobile manufacturers to get every assistance from the American Motor Corporation to establish motor manufacturing in India.

alone being responsible for 50 per cent of the total. The annual production of lac is about 1 million cwt. *In its refined form, in which it is usually packed for export, it is known as shellac.*

The insect which produces lac is known as *Laccifer lacca*. It lives as a parasite feeding on the sap-juices of certain trees like Palas, Kusum, Ber, Kahr, Ghont and Arhar.

Lac yields two products—a dye and a resin. Lac dye trades are no longer important because of the discovery of the aniline dyes. It is now the resin for which the lac is important.

Lac is used in a variety of industries. Between thirty and forty per cent. of the total lac is consumed by the gramophone records industry ; another thirty five per cent is utilised by the electrical, paint and varnish industries. Lac is also used in sealing-wax manufacture, photographic materials, the confectionery trade, bangles, toys, shoes dressings, micamite, grinding stones and munitions and fireworks.

About 97 per cent. of the lac produced in India is exported to the United States of America, England, Germany and Japan. America alone takes about 50 per cent. of the total production ; England, Germany utilise 20 per cent. each.

Although lac is a virtual monopoly of India its position is by no means secure because of the introduction of synthetic products in foreign countries. Bakelite is now largely used in the electrical trade. In the varnish trade, cellulose preparations are common.

Before the last war, India produced 90 per cent of the world's supply of lac. The remaining 10 per cent was produced in Siam, Indo-China and Burma. The refining of raw lac into shellac and seedlac was, however, the sole monopoly of India as the other producing countries sent their raw lac to India for processing.

It is learnt that Siam is now not only producing more lac but is also refining it into shellac for direct export to the U.S.A. and other foreign countries. Against a pre-war average annual export of 5,000 tons of sticklac (mostly to India) from Siam, about 10,000 tons of sticklac and 1,500 tons of shellac were exported from Bangkok during the first nine months of 1947 alone. This is equivalent to about 25 per cent of India's total production.

There is evidence, too, of improvement in the quality of the Siamese shellac and with all that its price is about two-thirds of that of Indian shellac. Shellac factories have been started in Siam for an annual output of 6,000 tons of shellac. This is about one-third of India's production.

The Indian Lac Research Institute was established in 1925 at Namkum near Ranchi with a view to devising improved methods of cultivation, improving the quality of lac, finding new uses for shellac and organising research in consuming countries in co-operation with the industries using lac.

The most deplorable fact about the shellac industry is that no attempt has hitherto been made to utilise it in India on a commercial basis.

Recently the London Shellac Research Bureau (controlled by the Indian Lac Cess Committee) has developed lac-on varnishes. During 1939-45 the new uses of lac for road paints, anti-gas paints, luminous paint, shellac bitumen, spirit paint, quick-setting cements and rapid drying varnishes for mineral oil and petrol containers were discovered.

The Cement Industry*

The Indian Cement industry consists of 13 factories who manufacture natural cement. Production capacity amounts to 2.1 million tons. The industry also produces articles manufactured from cement such as ordinary concrete, re-inforced concrete, marble imitations and cement sheets. The cement industry in India enjoys many natural advantages, such as abundant limestone of excellent quality occurring in many parts of the country close to railway lines, suitable clay also close to railway lines; and the production of gypsum in the country. With regard to fuel, however, the industry labours under a considerable handicap as all the concerns are situated at long distances from the coalfields, and the freight on coal is very a serious item in the cost of production. About 1.6 tons of limestone is required to make 1 ton of cement which contains 4 per cent gypsum and 38 per cent coal.

* Cement is a specially prepared material which is used as a binder for stones and brick masonry or as a matrix in the production of concrete.

The manufacture of cement in India was commenced as early as 1904 in Madras, although its production was negligible. The first World War gave impetus to the industry, and factories were started at Porbunder (Kathiawar), Katni (Central Provinces) and Rajputana. Since then the industry has progressed very rapidly, and the country has attained self-sufficiency.

			<i>Imports</i>	<i>Production</i>
1914	..	..	165,733	945 tons
1924	..	..	124,186	235,746 ..
1937	..	..	51,000	997,000 ..
1947	..	..	...	1,441,335 ..

The Indian cement faces the competition of foreign supplies only in ports. The up-country market, on the other hand, is entirely in the hand of Indian cement industry.

At present the Indian cement industry is working more or less as a single organisation, and the output and prices are controlled by a merger known as the Associated Cement Companies of India Ltd. India has developed an export trade, and the principal buyers are Iraq, Ceylon and Indonesia.

Match Industry

The Indian match industry owes its development to the protective tariff it enjoys. Before 1921 there was no successful manufacture of matches in India except a very small one in Ahmedabad. With the imposition of duties on imported matches since 1922, there has been a considerable expansion of the match industry, which enjoys a large home market and cheap labour. In order to avoid the protective import duty, a Swedish Company established factories in India during 1924 and 1925 at Bareilly, Calcutta, Madras and Ambernath. This company (Western India Match Co. Ltd.) has now a virtual monopoly of match production in this country and meets nearly 80 per cent of the demand. In 1938 India imported 55,000 gross of boxes as compared with 13¾ million gross in 1921.

At present the Indian Union has 107 match factories compared to 6 in Pakistan. The match factories are located in

Gwalior, Hyderabad, Dhubri (Assam), Kota (C.P.) and Shimoga (in Mysore), Petland (in Baroda), Madras (Tiruvattiyur, 18 miles from Madras), and Calcutta.

FACILITIES OF TRANSPORTATION

The extension of facilities of transportation is the most essential condition for the successful commercial development of a country. A good system of communication by land, water and air is one of the most important of all the requisites for the prosperity of a nation. Transportation permits a country to utilize its economic resources to the best possible advantages. There was practically no organised industry in India till the middle of the nineteenth century due to want of proper facilities of transportation. At present much has been done to develop roads, railways and civil aviation. "Industries have followed transport facilities."

Transportation in India can be divided into four heads :
(i) railways, (ii) roads, (iii) waterways, and (iv) airways.

Railways •

Railways are the most important of all systems of communications. Originally, railways were built up in India for military purposes. The frequent visitation of famine also necessitated the extension of railways. The railway have brought about an equalisation of prices throughout the country. The rapid industrialisation of the country is largely due to railway developments ; it has fostered agricultural production and encouraged the establishment of industries.

Before the partition, 43,000 miles of railway lines were open to traffic. The frequent changes of gauge and the scarcity of bridges across some of the bigger rivers are still the main drawbacks of the Indian railway system. To these must be added the absence of railway communications in Kashmir and Nepal. The Union has now about 36,000 miles of railway lines.

India requires more railway mileage. In comparison with the U. S. A., Canada and England, India is lagging behind in railway extension.

RAILWAY MILEAGE IN 1940

Countries	Mileage of total Railways	Mileage of line per 100 sq. mile	Inhabitants per mile of line
India	43,000	2·2	7,800
Canada .. .	40,351	1·10	222
U. S. A. ..	2,50,000	8·42	450

Before the partition Indian railways carried annually more than 520 million passengers and 88 million tons of goods. In auspicious years, when there was a great rush of pilgrims visiting holy places, the volume of passenger traffic increased further.

Chief Railway Lines of Indian Union

1. Assam Railway.
2. Oudh and Tirhut Railway.
3. Bombay, Baroda and Central India Railway.
4. Bengal-Nagpur Railway.
5. East Indian Railway.
6. Great Indian Peninsular Railway.
7. Madras and Southern Marhatta Railway.
8. East Punjab Railway.
9. South Indian Railway.

Before the partition, the two railway lines—the A. B. Ry. and the E. B. Ry. were amalgamated and called the Bengal Assam Railway. After the separation of India, the portion of metre gauge of B. A. Ry. falling in the Union is known as Assam Railway with headquarters in Pandu near Gauhati. *The Assam Railway* with a mileage of 1,300 serves Assam and some of the adjoining districts of West Bengal.

The portion of the B. A. Ry. falling in Eastern Pakistan is known as the Eastern Bengal Railway.

By the division of the country, 1,502 miles of B. A. Ry. section are now in Eastern Pakistan, and the West Bengal and Assam retain 1,775 miles of the section.

The Oudh and Tirhut Railway with more than 2,000 miles of metre gauge line serves the northern half of Bihar and the United Provinces. The main line extends from Katihar in

Bihar to Kanpur in the U. P. Several branch lines connect Benaras, Lucknow and Mokama Ghat. It joins the E. I. Ry. at Benaras, Allahabad, Kanpur and Patna, and the B. A. Ry. at Katihar. The line handles mainly coolie traffic. The Katihar portion of the metre gauge section of B. A. Ry. (about 186 miles) falling outside Pakistan is now merged with O. T. Ry.

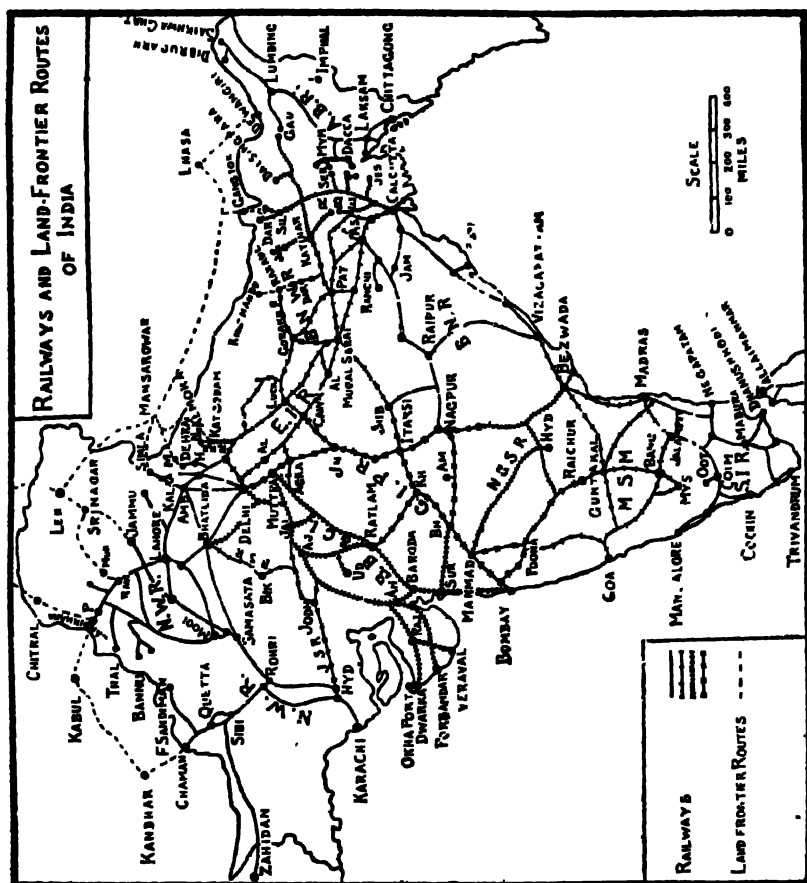


FIG. No 113 The map showing the principal Railway lines and the Caravan routes of India before the partition.

The Bombay, Baroda and Central India Railway with more than 3,500 miles of line serves the northern half of the Bombay Presidency, Central India and the southern portion of Rajputana. The main line extends from Bombay to Delhi through

Surat, Baroda and Mathura. There are a number of branch lines to serve Ahmedabad, Agra, Kanpur, etc. The B. B. and C. I. Ry. carries annually more than 10 million tons of goods and 9 million passengers.

The Bengal-Nagpur Railway with 3,500 miles of line serves South-West Bengal, Chota Nagpur, Eastern C. P. and the Andhra area in Madras. There are two main lines running from Calcutta, one to Nagpur and the other to Waltair. The Nagpur line crosses the rich mineral areas and handles the substantial portion of the traffic composed of manganese, coal, iron-ore, etc. Tatanagar—the most important iron centre of India—is on the Nagpur line. A number of feeder lines has been constructed to connect Tatanagar with the manganese and iron-fields of Bonai, Keonjhar and Singhbhum. The Waltair line handles a considerable coolie traffic. The opening of Vizagapatam as a first-class port and the construction of the Raipur-Waltair lines have made this section of the B. N. Ry. very important. Much of the goods traffic which previously used to be sent to Calcutta for export now passes through Vizagapatam. The B. N. Ry. normally carries annually 20 million passengers and 18 million tons of goods.

The East Indian Railway with more than 4,000 miles of line serves the entire Gangetic plain. No other Indian Railway system has played a greater part in developing agricultural and mineral wealth of India. Coal and mica of Bihar, jute of Bengal, sugar-cane of the U. P. and Bihar and many other commodities are handled by the E. I. Ry. In fact, the great development of Calcutta as a port is largely due to the extensions of the E. I. Ry. The main line extends from Calcutta to Ghaziabad (near Delhi) through Patna, Banaras, Allahabad, Kanpur and Aligarh. The line meets the O. T. Ry. at Banaras and Patna and the G. I. P. at Allahabad. In respect of freight traffic, the E. I. Ry. occupies the first place.

The portion of broad gauge of B. A. Ry. falling in the Indian Union has now formed a part of the E. I. Ry.

The Great Indian Peninsular Railway with more than 3,500 miles of line serves the central portion of the Bombay Presidency, Hyderabad, Western C. P., Central India, the south-western part of the U. P. and some parts of Rajputana. There

are four principal lines radiating from Bombay : (a) Bombay-Delhi through Manmad, Jalagaon, Itarsi, Bhopal, Jhansi, Agra and Mathura. From Jhansi a branch line goes to Kanpur. (b) Bombay-Allahabad by the valley of the Narmada and Tapti through Itarsi, Jubbulpore and Katni. (c) Bombay-Nagpur, through Jalagaon and Wardha. A branch line connects Nagpur with Itarsi. (d) Bombay-Raichar, through Poona after crossing the Bhorc Ghat. The G. I. P. Ry. carries more than 50 million passengers and 11 million tons of goods annually.

The Madras and Southern Marhatta Railway passes through the densely populated and fertile areas like Madras and Mysore and therefore handles large traffic. Grain, cotton, oil-seeds, salt, sugar, tobacco, timber and hides are the chief commodities handled. The line connects Madras with B. N. Ry. at Waltair and serves the eastern and the central districts of Madras Presidency. One line goes to Poona and another at Bezwada. The length of the line is more than 3,000 miles.

Before the partition of India *the North-Western Railway* was the largest and longest railway system in India. It had more than 7,000 miles of lines, extending into the Punjab, Sind, the North-West Frontier Province and Beluchistan. After the partition, the railway lines that are in East Punjab have constituted the *East Punjab Railway*. The East Punjab Railway has 1,610 miles of lines and its headquarters is in Delhi.

The South Indian Railway runs along the west coast of the Peninsula from Mangalore to Cochin. It is connected with the east coast by a line which crosses Pal Ghat and goes to Nagapatam. Coconut, sugar-cane, spices and oil-seeds are extensively handled by this railway. A line from Trichinopoly, west of Nagapatam, runs to Dhanuskodi. The total mileage of the railway is nearly 2,500.

Road Transport

Indian Union has about 250,000 miles of roads. Considering the size of the country this mileage is very meagre. Of the total roads, 67,000 miles only are hard-surfaced. Want of adequate roads is keenly felt in rural areas. Recently many roads have been constructed throughout the country for motor vehicles, but much more remains to be done in this direction.

Good road communication in a vast country like India, which is predominantly agricultural, is essential. Railways have served their purpose with credit and it is now felt that to help the country to continue the development of its potential wealth, roads must be opened and improved—not to supplant the railways in moving goods and people over long distances, but to provide a properly co-ordinated supplement to railway transportation.

ROAD MILEAGE* IN THE DIFFERENT PROVINCES OF INDIA IN 1946

Madras	.. 27,115 miles	C. P.	.. 7,535 miles
Bombay	.. 13,400 "	Bihar & Orissa	.. 3,961
Punjab	.. 7,000 "	Bengal	.. 3,000
U. P.	.. 7,776		

About 40 per cent. of railway mileage is paralleled by metalled roads. Buses and lorries carry goods and persons from rural areas to towns and railway stations. Motor transport has become an indispensable agency for short-distance traffic as it affords quick, cheap and flexible service. It cannot be denied that in many cases railways consider the public buses and lorries as competitors. Road transport is cheaper than railways, because it does not require stations, sidings etc., and as such, it can offer low rates. In the neighbourhood of large cities and suburbs and in areas where roads run parallel to railways, competition is confined to short distances only, viz., a range of 50 miles.

There are at present four trunk roads with which subsidiary roads are linked :

- (1) Calcutta to Delhi.
- (2) Calcutta to Madras.
- (3) Madras to Bombay.
- (4) Bombay to Delhi.

These trunk roads comprise 5,000 miles of metalled roads.

The roads are great feeders of railways. They link up the cultivators' holding with the local markets and the nearest railway station. Without good and sufficient roads railways cannot collect for transport enough produce to render its operation possible. To avoid competition, roads and railways should

be extended in such a manner that roads may become the feeders of railways and not their competitors.

The Caravan Routes

Although India has an extensive land frontier more than 3,000 miles long, the volume of trade is very small. Dense forests, high mountains and deserts have so long hindered the progress of land frontier trade. There is no through railway line from India to her frontier countries. Yaks, mules, camels and ponies are usually employed in maintaining trade relations with Central Asia, Tibet and Nepal.

There is a route which goes from Leh in Kashmir to Tibet and Sinkiang. This is one of the hardest routes in the world, as it includes the Karakoram Pass (18,000 ft.)

Communications with Tibet are maintained through Darjeeling, Nainital and Bettiah.

From Lado in North-East Assam the route which runs to China, through Burma assumed great importance during the Second World War. This route is known as the Stilwell Road (formerly the Lado-Burma Road). From Lado, the route proceeds towards the south and reaches Bhamo *via* Myitkyina. A separate road also reaches Bhamo from Lashio. From Bhamo the route goes towards the east and after traversing a series of high mountains reaches Kunming *via* Paoshan. The distance between Lado and Kunming is 1,044 miles. The same road continues for another thousand miles to reach Chungking. The Stilwell Road may help the development of Indo-China trade.

A considerable trade passes between India and Pakistan by land frontiers.

Waterways

From the earliest times the trade and commerce of Northern India have been much facilitated by the abundance of navigable streams. The combined mileage of the navigable rivers in Northern India is about 20,000. Before the advent of the railway, the rivers of Northern India handled a considerable portion of the country's inland trade. But inland navigation has received a great set-back with the development of railways.

Besides a large number of minor streams, India has two great rivers which serve, even to-day, as arteries of trade and travel. These are the Ganges and the Brahmaputra.

The Ganges is the most important river of India. The source of the Ganges is an immense mass of snow at 14,000 feet on the Himalayan range in the Garhwal district. The river is 1,500 miles long. From Hardwar at the foot of the Himalayas, the Ganges flows in a south-easterly direction through the rich alluvial plain of the U. P., Bihar and Bengal into the Bay of Bengal. For about 500 miles from its mouth, the river maintains a nearly uniform depth of about 30 feet, and therefore steamers can safely move up to that distance, although country boats proceed as far as Hardwar. "The navigation in the Ganges is quite magnificent and offers probably one of the finest spectacles of its kind to be seen in the world." The Ganges has lost much of its importance as a highway of commerce because of the development of the railways.

The tributaries of the Ganges are mostly on its left bank, and these are the *Gumti*, *Gogra* and *Gandak*. Scanty rainfall and the absence of any snow-capped mountain in Central India account for a small number of tributaries on the right bank of the Ganges. The *Jumna* is a great tributary of the Ganges and runs parallel to it for 860 miles and joins the Ganges at Allahabad.

The important towns on the Ganges are Hardwar, Kanpur, Allahabad, Mirzapore, Benaras, Ghazipur, Patna, Monghyr, Murshidabad and Calcutta, while on the Jumna the towns are Delhi, Mathura and Agra.

The Brahmaputra is one of the longest rivers in the world. It is about 1,800 miles long. It has its source at a height of nearly 16,000 feet, a little east of Lake Manasarowar in Tibet. Flowing eastwards along the foot of the northern slopes of the Himalayas, it enters Assam and takes a sharp bend towards the south-west. After traversing the entire length of the Assam valley, the Brahmaputra again bends towards the south and joins the Ganges at the south-eastern corner of the Pabna district in Eastern Pakistan.

The river is navigable by steamers throughout the year and steamers run from the mouth to Dibrugarh, about 800 miles from the sea. There are certain drawbacks in the river which

make navigation dangerous: (a) formation of new islands, sand banks and shoals, and (b) the presence of a very strong current during the rains. The rich deposits of silt as the result of floods every year make agriculture very productive in the Brahmaputra basin. In agricultural and commercial utility, the Brahmaputra ranks next to the Ganges.

The principal rivers of Peninsular India are the *Narmada*, *Tapti*, *Mahanadi*, *Kistna* and *Kaveri*. Of these, the Narmada and the Tapti flow towards the west coast. Owing to the greater heights of the Western Ghats, the other rivers flow towards the east. These rivers are navigable in their lower courses only during the rainy season.

There are only a few navigable canals in India, the most notable being (i) the Circular and Eastern Canals in Bengal, (ii) the Ganges Canal running from Hardwar to Kanpur, (iii) the Buckingham Canal running parallel to the east coast in Madras and (iv) the Orissa Coast Canal. Conditions for constructing canals are very favourable in the coastal regions of Bengal, Orissa and Madras. "In Eastern Bengal particularly there is considerable scope for connecting the canals so as to improve the navigation facilities in connection with its great river system."

The need for waterways in India is great. In spite of physical difficulties, much improvement can be made in the existing waterways of the country. Its development would not only remove the congestion of traffic from railways, but would also open up many new areas whose products cannot be at present moved because of high railway freights.

The Sea Routes

The sea routes radiate mainly from the five major ports of Calcutta, Vizagapatam, Madras, Bombay and Cochin. The principal sea routes of India are the Suez route, the Cape route, the Australian route and the Singapore route. *The opening of the Suez route* has increased the volume of trade between India and Europe. The B. I. S. N. and P. & O. Companies control this route so far as the trade relation of India and Europe is concerned. India sends raw materials and food-products and receives in return manufactured articles.

The Singapore route is second to the Suez route in respect of volume of traffic. This route connects India with China and Japan. The route also maintains India's trade relation with Canada and New Zealand. The important steamship companies which used to serve this route during pre-war days were the Indo-China S. N. Co. Ltd., the N. Y. Kaisa and O. S. Kaisa.

The imports into India through this route are cotton and silk manufactures, iron and steel, machinery, porcelain, toys, chemicals, paper, hardwares, etc. The exports from India are raw cotton, pig iron, manganese, jute, shellac, mica, etc.

The Australian route is gradually becoming important. It connects India with Australia. The imports into India are wheat, raw wool, horses, canned fruits, provisions, etc. The exports from India are jute, tea and linseed. The chief ports of Australia engaged in maintaining trade relations with India are Brisbane, Sydney and Melbourne.

In the *sea-borne trade*, Indian vessels have practically no place as carriers. Of the total trade it controls only 2 p.c. It is equally pitiable in coastal trade, where Indian vessels control about 20 p.c. of the total. The Indian shipping companies find it difficult to start operations because of the keen competition. The British, the French, the Japanese and the Italians controlled large share in our sea-borne trade—coastal as well as oceanic before the Second World War.

Airways

Indian Union has become a vital force in modern air age, having acquired the fourth place in civil aviation among the nations of the world.

The speedy advancement of civil aviation in India is regarded as having no parallel in the world.

Indian Union has three big airports at Bombay, Calcutta and Delhi (Palam), maintained, on international standards, seven major aerodromes at Ahmedabad, Allahabad, Lucknow, Madras, Nagpur, Patna and Vizagapatam, 13 intermediate aerodromes and 22 minor aerodromes. Besides these there are 26 aerodromes in the states which have acceded to the Dominion. The Government of India propose to construct in the immediate future new civil aerodromes in 14 places, namely, Ajmere,

Aligarh, Berhampur, Calicut, Cuddalore, Dehra Dun, Hubli, Mangalore, Nellore, Ootacamund, Salem, Ratnagiri, Saugor and Surat.

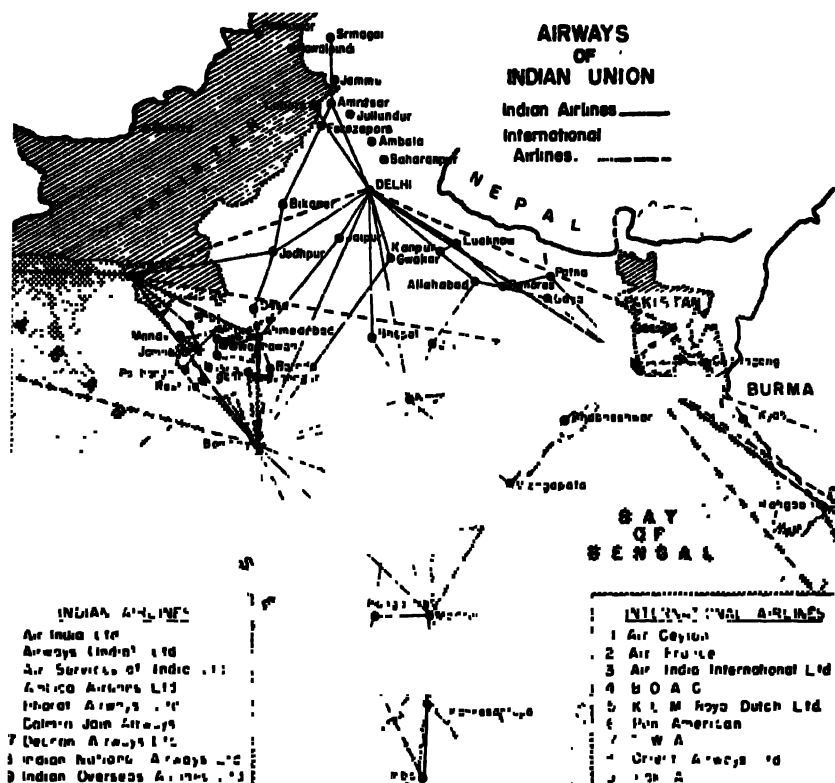


FIG. NO. 115 Note the different lines meeting Calcutta, Bombay and Delhi.

After the partition of India in the second half of 1947, there were 23 companies with 22 routes covering 13,295 route-miles. There were 16 daily services and 42 weekly services. Miles flown were 4,648,155. The number of passengers flown was 1,36,806 and freight, 1,120 tons in addition to 298 tons of mails and 504 tons of newspapers.

In 1948 there were three overseas services and 41 internal air services in operation on 27 routes. The mileage average per month was 1 million and passengers carried per month was 27,000.

CIVIL AVIATION IN INDIAN UNION, 1948

Routes	Miles	Frequency
1. <i>Air India Ltd.</i>		
Karachi — Ahmedabad — Bombay— Hyderabad—Madras—Colombo ...	1780	daily
Bombay—Ahmedabad—Jaipur—Delhi	750	„
Bombay—Calcutta	1038	„
Madras — Bangalore — Coimbatore— Cochin—Trivandrum	509	6 weekly
Calcutta—Gauhati—Dibrugarh ...		daily
2. <i>Indian National Airways Ltd.</i>		
Delhi—Lahore	264	daily
Delhi—Amritsar	245	„
Delhi—Calcutta	812	„
Delhi—Jodhpur—Karachi ..	683	„
3. <i>Air Service of India Ltd.</i>		
Bombay — Porbandar — Jamnagar— Bhuj—Karachi	620	daily
Jamnagar—Ahmedabad	162	1 weekly
Bombay—Bhavnagar	210	3 weekly
Bombay—Gwalior—Delhi ...	774	3 weekly
4. <i>Deccan Airways Ltd.</i>		
Delhi—Bhopal—Nagpur—Hyderabad —Madras	1155	daily
Hyderabad—Bangalore	316	4 weekly
Hyderabad—Bombay	387	daily
5. <i>Indian Overseas Air Lines Ltd.</i>		
Bombay—Nagpur—Calcutta ...	1038	daily
6. <i>Ambica Air Lines Ltd.</i>		
Bombay — Baroda — Ahmedabad— Jodhpur	513	daily
Bombay—Rajkot—Morvi—Ahmedabad	413	„
7. <i>Airways Ltd.</i>		
Calcutta — Vizagapatam — Madras— Bangalore	1036	4 weekly
8. <i>Bharat Airways Ltd.</i>		
Delhi—Amritsar—Jammu—Srinagar	245	daily
Delhi—Lucknow—Gaya—Calcutta	809	3 weekly
Delhi—Kanpur—Calcutta	819	4 weekly

Besides these internal services, Indian companies maintain overseas services with the United Kingdom, Burma, China, and Japan. •

Several foreign air lines have air service in Indian Union. These foreign lines are the following :

- I. British Overseas Air Corporation (B. O. A. C.)—London-Calcutta via Malta, Cairo, Basra, Karachi and Delhi.
- II. Trans-World Airline (T. W. A.)—Washington-Bombay.
- III. Air France—Paris-Saigon via Cairo, Karachi and Calcutta
- IV. Dutch Air line (K. L. M.)—Karachi-Calcutta-Singapore-Batavia.
- V. Pan American World Airways—Calcutta to New York via Karachi, London, Gander ; Calcutta-San Francisco via Bangkok, Manila and Honolulu.

There is also air service between India Union and Pakistan. The chief routes are (a) Karachi-Delhi ; (b) Karachi-Bombay ; (c) Dacca-Calcutta ; (d) Calcutta-Chittagong ; (e) Dacca-Delhi.

FOREIGN TRADE

People having different goods, exchange them with one another because it is to their mutual advantage. It is always through trade that man can extend his geographical environ-

* Trade is the result of specialization, either natural or artificial. Generally different areas specialise in the production of those commodities for which they possess comparatively greater advantages of production, which are due to (a) differences of natural resources, (b) special aptitudes and (c) favourable geographical position such as proximity to ports and markets.

The large quantities of Mirzapur carpet, Benares brassware and Murshidabad silk or Delhi ivory goods or Kashmir shawl which sell all over the country, show how articles of trade are made by the specialised skill, knowledge or taste of the people engaged in their production. But such specialised knowledge and skill tend to disappear with the growth of industrialization and progress of communications, e.g., Paisley produces shawl similar to Kashmir and imitation brasswares made in England are scarcely distinguishable from those of Indian ones.

Diversity of natural resources due principally to differences of (a) climate, (b) geological formations, (c) topography and (d) world position also accounts for the specialisation of particular goods in different regions.

ment. Trade makes men's struggle for existence easier and enables them to raise their standard of living.

Trade may be of two kinds—Home trade and Foreign trade. When goods are sold and purchased within the boundaries of a particular country, the operation is known as home trade. In foreign trade goods traverse the boundaries of the home country and there is a regular interchange of goods with the inhabitants of foreign countries.

Foreign trade is important for several reasons. First, it enables a country to sell its surplus goods to foreign countries at an advantage ; second, it can obtain goods and machinery which it does not produce itself and require for internal economic development ; and third, in liquidating international obligations, if any, every country must participate in foreign trade to a more or less extent. Another social advantage of foreign trade is that it brings about a better understanding among peoples who have to come into mutual contact in the process of trade

The foreign trade of India is fairly large. The aggregate volume of India's trade was sufficiently large to entitle her to the fifth place among the countries of the world in 1938-39 in the following order:—The United Kingdom, the U. S. A., Germany, France and India. By far the most important trade relation of India is with Great Britain and Commonwealth.

Certain characteristics are noticeable in the matter of the foreign trade of India.

The excess of exports over imports of merchandise is the most outstanding feature of our foreign trade. There has always been a balance of trade in our favour. In the past, the balance was made good by the import of precious metals like gold and silver. Although the balance was substantial in our favour, the precious metals imported had not been proportionate because of the political 'drain' from this country on account of "home charges" of the Government of India. So our balance of trade shrank in size and volume due to the Home charges which amounted to something like Rs. 40 crores a year (from the days of the Company till before the Second World War). During the Second World War, India supplied goods and services to the United Kingdom to the extent of £1200 million. For

this India received I.O.U's of the British Government which now constitute the Sterling Balances.

The second characteristic of India's foreign trade consists in the contents of that trade. Until recent years, India's imports consisted of manufactured or semi-manufactured goods, while exports consisted of raw materials and food-stuffs. The trend has now changed because under the stimulus of war-time demand, many new industries were built up and the existing ones were improved and enlarged. India has begun to manufacture a good deal of what she imported from outside. This industrialisation all over the country has also resulted in the fall of exports of raw materials.

		Export	Import	
		Raw materials	Manufactured	Raw
1936-37	...	53%	40%	16%
1945-46	..	29%	40%	48%

Before the war, exports of raw materials from India accounted for about 50 per cent. of total exports. In 1945-46, the exports of raw materials were reduced to 29%. On the import side of India manufactured goods declined to 40% in 1946 from 75% in 1937 out of total exports.

The third characteristic of India's foreign trade before the war was that the bulk of foreign trade was with the United Kingdom and her Dominions because of Imperial Preference. As a rule, the U. K. and her Dominions sold more to India than what they bought from India. On the other hand, other countries in Europe, America or Asia, took more of our exports than we imported from them.

The fourth feature of the foreign trade of India is the extremely small proportion of its *land trade*. With the growth of communications, this trade with China, Russia, Pakistan, Burma, etc., will develop further. At present about 98% of our foreign trade is sea-borne.

The difference between the value of export and import is known as the *balance of trade*. When India's exports exceed her imports, the balance is said to be in India's favour. The excess of export is always noticeable in India's trade figures.

DIRECTION OF INDIA'S TRADE BEFORE PARTITION

<i>Exports by Percentage</i>			<i>Imports by Percentage</i>		
		1938-39			1938-3
United Kingdom	..	34.0	United Kingdom	..	30.5
Japan	..	9.0	Burma	..	16.6
U. S. A.	..	8.5	Japan	..	10.1
Burma	..	6.2	Germany	..	8.5
Germany	..	5.1	U. S. A.	..	6.4
France	..	3.8	Kenya	..	3.4
Ceylon	..	3.1	Iran, Iraq	..	2.9
Belgium	.	2.6	Straits Settlements	..	2.7
Netherlands	..	2.3	Belgium	..	1.9
Australia	..	1.8	Italy	..	1.8
Argentina	..	1.8	Australia	..	1.6
Iran, Iraq	..	1.6	Switzerland	..	1.1
Italy	..	1.6	China	..	1.1
China	..	1.5	France	..	0.9

Partition had not only reduced India's capacity to export commodities like raw jute, raw cotton and hides and skins, but it had also made India a substantial importer of these commodities. Thus, while three years ago India was the sole exporter of raw jute, today she is the largest importer of raw jute in the world. The result had been not only a decline in India's exports to the rest of the world with an increase in her adverse balance of trade, but she also had an adverse balance of trade with Pakistan itself.

The noteworthy change in the export trade after the partition are the importance of tea, the increase in the export of cotton goods, and decrease in the export of raw cotton and raw jute.

Imports into Indian Union in 1948-49 amounted to Rs. 518 crores as against Rs. 378 crores in 1947-48. A large part of this increase can be attributed to a rise in prices of imported goods. Another salient feature during this period in the import statistics is that the increase in the value of capital goods contributed substantially to the rise in the total value of our imports. In 1948-49 the total value of exports from Indian Union have been approximately Rs. 423 crores as against Rs. 411 crores in 1947-48.

Thus Indian Union had an adverse balance of trade to the tune of Rs. 95 crores during 1948-49. If the sea-borne trade with Pakistan was excluded from these figures, India's imports from other countries totalled Rs. 497 crores and her exports Rs. 378 crores, leaving an adverse balance of Rs. 119 crores.*

The principal commodities of the Union's export trade are jute goods, tea, cotton goods and hides and skins. During the first six months of 1948-49 the exports of jute and jute goods together constituted Rs. 78.1 crores in value out of the total export trade of Rs. 209.8 crores. Next in importance came tea which were valued at Rs. 23.7 crores.

CHIEF EXPORTS (SIX-MONTHS ENDED IN SEPT. 1948)*

(In crores. of Rupees)

Jute goods	78.1	Oilseeds	7.4
Tea	23.7	Hides & Skins	6.4
Cotton goods	22.8	Other yarn & Fabrics	4.2
Raw jute	13.5	Gums, Resins	4.8
Raw cotton	11.6		

United Kingdom and the United States of America are the two principal purchasers of Indian goods, U. K. purchasing goods valued at Rs. 9,767 lakhs and U.S.A., to the value of Rs. 7,003 lakhs. Pakistan, Australia, Ceylon, Canada, Argentina, Burma, France, Netherlands, Egypt and Italy are the other main purchasers.

The principal items of the Union's import trade, in order of importance, are jute, machinery, grain, pulse and flour, raw cotton, oils, metals and ores, vehicles, chemicals and drugs, dyes and colours, cutlery, cotton yarns and other yarns, and wool.

* Certain factors operated against the expansion of India's export trade. These are (a) high prices of tea resulting in the use of substitutes in U. S. A., (b) high price of yarns, (c) increase in the purchasing power of low-income group in India has led to an increase in the demand for home consumption, resulting in less being available for export, (d) poor quality of exports, particularly textiles.

* The following are the figures now available in respect of exports for 1948-49.

Jute yarns and manufactures	Rs. 146.31 crores
Tea	63.69 "
Raw jute	23.89 "
Hides and skins	12.69 "
Jute manufactures	146.31 "

PRINCIPAL IMPORTS (SIX MONTHS ENDED SEPTEMBER 1948)

<i>In crores of rupees.</i>			
Machinery	..	39'1	Metals 16'3
Grain	..	36'5	Vehicles 14'5
Raw cotton	..	26'6	Chemicals 12'5
Oil	..	18'2	

The most valued item is machinery, followed by grains. The acute shortage of food in India necessitated large import of this commodity. The heavy import of raw cotton and jute is due to the division of the country as the important jute and cotton tracts are now in Pakistan.

Of India's total imports of Rs. 497 crores during 1948-49 from countries other than Pakistan, imports of machinery accounted for Rs. 80 crores, foodgrains Rs. 66 crores, raw cotton Rs. 48 crores, mineral oils Rs. 37 crores and metals Rs. 32 crores.

The bulk of imports from Pakistan were of raw cotton and jute. The import of these very essential commodities, required for the maintenance of the general economy of the country and its industrial production and development, alone accounted for over 60 per cent. of the total imports.

EXPORTS AND THEIR DESTINATIONS

(a) *Jute manufactures*: The U.S.A., Argentina, Belgium, Australia, Canada, Japan, etc. The U.S.A., the largest importer, takes 32 per cent. of the total jute manufactures. Jute goods, the most important of India's export commodities which accounts for 35 per cent of India's total earnings of foreign exchange and over 62 per cent of the earnings of hard currency, seems to be becoming more and more expensive every day. One of the main advantages of jute goods as containers lay in their cheapness. Today their prices are so high that substitutes made of paper and cotton are being used in the U.S.A. in increasing quantities, and in 1948 the U.S.A. took only 215,000 tons against the pre-war peak figure of 291,000 tons.

The exports of jute manufactures in 1948-49 were valued at Rs. 146'31 crores from the Union.

(b) *Tea*: The U.K., Canada, Australia, the U.S.A., Iran, Arabia, Ceylon, etc. The United Kingdom remains the best customer of Indian tea, consuming as she does about 60 per cent. of the exportable surplus. High price of tea is operating against the expansion of tea export trade.

Tea worth Rs. 63.69 crores was shipped from India in 1948-49.

(c) *Hides and Skin*: The U.K., the U.S.A., Germany, Japan, France, Italy, Holland, etc. The U.K. (67 per cent.) and the U.S.A. (15 per cent.) are the largest importers.

Exports of hides and skins, tanned or dressed or leather were valued at Rs. 12.69 crores in 1948-49.

(d) *Oil-seeds*: The U.K., France, Germany, Holland, Italy, Belgium, Ceylon, etc. The U.K. imported 28 per cent. and Italy imported 16 per cent. before the war.

(e) *Metals and ores*: The U.K., Japan, Straits Settlements, Germany, Belgium, France, the U.S.A., Ceylon, Italy, etc.

(f) *Raw Jute*: The U.K., Germany and Japan. Trade in raw jute has declined considerably after the Partition. In 1948-49, she exported raw jute worth Rs. 23.89 crores.

IMPORTS AND THEIR SOURCES

Indian Union imported during 1948-49 from the following countries:

Goods valued at Rs. 15,213 lakhs and Rs. 10,424 lakhs were imported from United Kingdom and U.S.A. The other sources of import were: Egypt (Rs. 31.89 crores), Pakistan (Rs. 22.37 crores), Australia (Rs. 20.93 crores), Iran (Rs. 20.09 crores), Burma (Rs. 18.77 crores), Switzerland (Rs. 8.66 crores), Straits Settlements (Rs. 8.28 crores), Canada (Rs. 7.91 crores), Belgium (Rs. 7.15 crores), Argentina (Rs. 6.60 crores), Japan (Rs. 6.37 crores), Sweden (Rs. 6.05 crores), and Anglo-Egyptian Sudan (Rs. 5.53 crores).

(a) *Machinery*: The U.K., Germany, the U.S.A., Belgium, Japan, France, etc. The U.K. is the largest supplier (70 per cent.). In 1948-49, the Union imported Rs. 80 crores worth of machinery.

(b) *Motor Cars, etc.*: The U.K., the U.S.A., Canada, Germany, Italy and France.

Imports of vehicles were valued at Rs. 32.68 crores in 1948-49.

(c) *Mineral oil*: Iran, China, Borneo, Sumatra, the U.S.A., Burma, etc.

It accounted for Rs. 35.37 crores in 1948-49.

(d) *Paper and Pasteboard*: The U.K., Germany, Sweden, Norway, the U.S.A., etc.

(e) *Silk Manufactures*: Japan, China, Italy, the U.K., etc. Japan sends 73 per cent. in normal times.

(f) *Chemicals*: The U.K., Germany, Japan and the U. S. A. India imported chemicals in 1948-49 to the value of about Rs. 28.89 crores.

(g) *Raw jute*: Pakistan. Indian Union requires about 4.5 million bales of raw jute annually.

(h) *Raw cotton*: Egypt, U.S.A. and Pakistan. Indian Union requires from Pakistan about 1 million bales of raw cotton annually. In 1948-49, she imported raw cotton worth Rs. 64.23 crores.

(i) *Grains and flour*: Canada, Australia, Burma, U.S.A.—In 1948-49, she imported food grains worth Rs. 66.51 crores.

India's Trade Relations with certain Important Countries

The United Kingdom. The most prominent feature in the direction of India's foreign trade is the fact that it is dominated by the U. K. both in imports and exports. The principal exports to the U. K. are tea, jute, hides and skin, oil-seeds, raw cotton, raw wool, grains, oil-cakes, metals and ores. Tea alone accounts for more than one-third of the value of total exports to the U. K. On the import side, the chief articles are machinery and millworks, iron and steel, chemicals, instruments, hardware, liquors, motor cars, rubber manufactures, paper and pasteboard, etc. Machinery and millworks usually comprise one-third of the value of total imports from the United Kingdom.

U. K. TRADE WITH INDIA*

Principal Exports and Imports

(£ 000) `

Full year
1948

Total All Exports to Indian Union ..	~	96,621
--------------------------------------	------	----	--------

Of which :—

Machinery .. .. .	..	34,079
Vehicles (including ships, aircraft & locomotives)	12,827	
Electrical goods & apparatus .. .. .	..	6,572
Chemicals, drugs, dyes & colours .. .. .	..	9,057
Total All Imports from Indian Union .. .. .	..	96,266

Of which :—

Tea .. .. .	..	35,148
Jute manufactures .. .. .	..	15,852
Raw jute .. .. .	..	5,955
Leather & manufactures .. .. .	..	7,228

Pakistan. The significance of Pakistan as a supplier to Indian Union and the importance of Pakistan as a market for Indian goods are great. Pakistan was second in the list of the markets for Union's exports in 1948-49. Pakistan is also a valuable source of India's imports. The important article of import from Pakistan are raw jute, raw cotton, wool, foodgrains, fruits and vegetables. But much of the export of raw jute will have to go through Calcutta, as there is no first class port in East Bengal. The exports from Indian Union are cotton cloth, jute manufactures, gur, iron and steel, coal, tea, cement, paper, etc. The balance of trade will remain in favour of India.

The Indo-Pakistan Trade Agreement made for one year (1st July 1948 to 30th June 1949) has been renewed for another year. The terms of the first agreement are the following :

* Source.—Trade and Navigation Accounts of the U. K. (H.M.S.O.).

(a) Pakistan will supply to Indian Union :

Raw Jute	.. ..	50,00,000 bales
Raw Cotton	.. ..	6,50,000 bales
Foodgrains	.. ..	1,75,000 tons
Gypsum	. ..	1,000 tons per day
Rock salt	.. ..	20,00,000 maunds
Potassium Nitrate	.. ..	5,000 tons
Cattle	.. ..	550 heads

(b) India will supply to Pakistan :

Coal	.. ..	21,96,000 tons
Cloth and Yarn	.. ..	4,00,000 bales
Steel, Pig-iron, Scrap	.. ..	90,000 tons
Paper and board	.. .	7,500 tons
Chemicals	.. ..	1,270 tons
Asbestos cement sheet	.. ..	2,500 tons
Paints, enamels and varnish		2,500 tons
Tyres and tubes	.. .	18,00,000
Leather and footwear	..	Quantity not fixed.
Jute manufactures	.. ..	50,000 tons
Myrobalans	.. ..	2,000 tons
Woollen and Worsted goods		11,00,000 lbs.
Mustard oil	.. ..	20,000 tons
Groundnut oil	.. ..	5,000 tons
Malabar Jungle wood	.. ..	10,000 tons
Toilet Soap	.. ..	2,000 tons
Cured Tobacco	.. ..	7,00,000 lbs.

The agreement is based generally on the principle of maintaining inter-Dominion trade, as far as possible, on the same lines and scales as prevailed between the two parts of the sub-continent before partition.

Burma has a large share in the foreign trade of India. Burma sends 16 per cent. of India's imports and occupies the second position in the list of India's suppliers. India sends only 5 per cent. of her total exports to Burma. The balance of trade is, therefore, unfavourable to India. Imports from Burma consist largely of rice, petroleum and teak wood. These represent more than 85 per cent. of the total imports from Burma. More than 40 per cent. of our exports to Burma con-

sists of cotton and jute manufactures. Other exports are iron and steel, tea, sugar and coal. Burma is India's best customer of coal.

• **Ceylon.** The important items of imports into India from Ceylon are: copra, coconut oil and tea. Unhusked rice, cotton piece-goods, fish and coal are the important items of exports from India. Ceylon is India's second best customer of coal. Other important items of exports to Ceylon are pulses, fruits and vegetables,* chillies, oil-cakes and manures.

India has had a favourable balance for many years in her trade with Ceylon.

INDO-CEYLON TRADE

(In lakhs of Rupees)

<i>India's Exports to Ceylon</i>			<i>India's Imports from Ceylon</i>		
	1938-39	1941-42		1938-39	1941-42
Rice ..	117	225	Copra ..	61	182
Cotton goods	66	131	Coconut oil ..	14	...
Coal ..	28	...	Tea ..	2	7
Tea ..	26	53	Fish .	35	...
Pulses ..	28	...	Rubber ..	..	60
Fruits ..	23	31	Spices ..	...	15
Chillies ..	18	.			
Manures ..	14	12			

Japan. The balance of trade in relation to Japan is not favourable to India. Indian exports to Japan have been continuously declining recently. Imports into India from Japan are cotton manufactures, artificial silk, silk manufactures, wool manufactures, glass and glass-ware, iron and steel machinery and millworks, earthenware and porcelain, toys and requisites for games and hardware, chemicals, paper and pasteboard and stationery, raw silk, rubber manufactures, electrical instruments and apparatus, paints and painting materials. Cotton manufactures account for 50 per cent. of India's total import from Japan. The principal items of India's exports to Japan are raw cotton, pig iron, manganese, jute (raw and manufactured), mica, shellac, etc. Raw cotton usually constitutes more than a

quarter of Japan's total imports of foreign goods. About 55 per cent. of India's exports of pig iron are consumed by the Japanese iron factories.

Germany. In normal times, imports from Germany into India consist of iron and steel, brass and copper, hardware, machinery and mill-works, glass and glassware, liquors, paper and pasteboard, woollen manufactures, salt, blankets, etc. Exports to Germany consist of jute (raw), grain, pulses, flour, cotton (raw), seeds, hides and skins (raw), lac, coir manufactures, bones, hemp (raw), etc. Jute accounts for nearly one-fourth of the total value of exports to Germany.

During the World War II, there was no Indo-German trade. Even now revival of trade between these two countries has not taken place because of Germany's present political and economic conditions. Her present industrial capacity is only 39 per cent. of the pre-war level. *In 1948, the Government of India sent a Trade Delegation to Germany to study the prospects of Indo-German trade.* As a result, in July 1948 a trade agreement has been made between India and Germany which provides for the issue by both countries of export and import licences for the following commodities :

COMMODITIES TO BE EXPORTED TO GERMANY

Agricultural products. Groundnuts, fatty acids, groundnut oil, industrial linseed and spices.

Hides and skins. Cow hides, buffalo hides, goatskins, half-tanned bastard skins, tanning agent (myrobalans) and hide cuttings.

Metals. Manganese ore.

Chemicals and related products. Mica, lemon grass oil, sandalwood oil, gum karaya, ilmenite ore and caustic magnesite.

Pharmaceutical herbs. Senna leaf, senna pods, nux vomica, nux Africa, fennel, ephedra and circuma.

Other items. Stick lac and shellac, crude glycerine, castor seeds and manganese dioxide (Pyrolusite).

Textile materials. Jute, jute shoddy, coir yarn and fibre, hog bristles, cattle tail hair, raw wool and kapok.

COMMODITIES TO BE IMPORTED FROM GERMANY

Chemicals and related products, including the following:

Coal-tar dyes, pharmaceuticals, sodium sulphide, zinc oxide, acetic and formic acids, sodium sulphhydrate, auxiliaries for textiles and dyes, auxiliaries for textiles on oleic acid basis, tylose and derivatives, rongalit, Igepon T Powder, highly concentrated anti-oxygen and accelerators, photographic papers, lithopone, titanium dioxide, benzyl alcohol, benzyl acetate, benzoate, sodium benzoate, synthetic raw materials for lacquers, trichlorethylene, plastic moulding compound, chemical reagents for laboratory use and synthetic camphor.

Glassware. Sheet and plate glass.

Machinery and metal products. Textile machinery, textile stores and accessories, heavy ploughs and spares, printing machinery, tractors, paper making and paper machinery, steel plant equipment and accessories, industrial sewing machines, chiefly spares, electric motors—30 h.p. and above, turbine spares, steam turbines, generators, machinery and machine tools, motor car spares, hardware, chaff cutter knives, diesel engines and spares, miscellaneous machinery.

Electrical equipment. Electro-medical equipment, switch-gear, tubular steel poles, carbon brushes, wiring accessories, installation material, etc., telephone equipment—mainly spares.

Instruments and apparatus. Microscopes, binoculars and telescopes, precision and X-ray cameras and photographic equipment, survey and other optical instruments, fine mechanical and precision instruments, spectacles and lenses, surgical and medical instruments and industrial clock, cinema projectors, miscellaneous instruments.

Iron and steel. Rolled steel products.

United States of America. India has generally enjoyed a favourable balance of trade with the U.S.A. The principal items of exports from India to U.S.A. are jute and jute goods, shellac and lac, cashew nuts, tea, hides and skin, carpet wool, leather, undressed furs and mica. These items totalled Rs. 84 crores in 1947 as against Rs. 19 crores in 1938. The main items of India's imports from U.S.A. are wheat and bread grains, other foodstuffs, chemicals, machinery, unmanufactured tobacco,

metals and metal manufactures, petroleum and its products, textiles and raw cotton. The value of these items totalled Rs. 133 crores in 1947 as against Rs. 11 crores in 1938. The excess of imports over exports in 1947 was due primarily to India's need for large quantities of foodgrains. Thus India's balance of trade with U.S.A. depends on the extent to which India would continue to import foodgrains and capital goods and also on India's ability to increase exports of commodities to America.

India has land frontier trade with Pakistan, Nepal, Tibet and China. The principal commodities that are imported by India from these countries are grain, jute, fruits, raw wool, living animals and raw silk. The most important exports are cotton goods, sugar, leather manufactures, tea, silk goods, iron and steel goods and salt.

India has also a large entrepot trade. The entrepot trade of a country consists of the re-export of articles previously imported. In other words, a country which imports things with a view to exporting them is known to have entrepot trade. India occupies a very favourable geographical situation for the purpose of doing entrepot trade as she is at the centre of the Eastern Hemisphere.

From the West, cotton, chemicals, machinery, minerals and metals are imported for distribution to countries like Kenya, East Africa, Japan, Straits Settlements and China.

PORTS AND TRADE CENTRES

Industrialisation of a country may be measured by the growth in the number of its cities. In India the great majority of the people derive their livelihood from agriculture. Consequently there is a great variation in urban and rural population. About 11 per cent. of the total population live in the cities or in the suburban districts of India.

There are only 49 cities in India with a population of two classes—those having more than 2,00,000 and those having less than 2,00,000.

TOWNS WITH POPULATION OF 100,000 AND OVER

		(1941 Census)	
Provinces	Number of Towns	Provinces	Number of Towns
Bombay ..	4	C. P. ..	2
West Bengal ..	4	Delhi ..	1
Madras ..	6	Ajmer-Merwara ..	1
U. P. ..	12	States and Agencies ..	13
East Punjab ..	3		—
Bihar ..	3		49

TOWNS WITH POPULATION OF 200,000 AND OVER

		(in 000)	
Towns	Population	Towns	Population
Calcutta ..	3,109	Benares ..	263
Howrah ..	379	Kanpur ..	487
Ahmedabad ..	591	Lucknow ..	387
Bombay ..	2,490	Allahabad ..	261
Poona ..	258	Amritsar ..	391
Sholapur ..	213	Nagpur ..	302
Madras ..	1,077	Delhi ..	1,022
Madura ..	239	Bangalore ..	248
Srinagar ..	208	Hyderabad ..	739
Agra ..	284	Indore ..	204

TOWNS WITH POPULATION OF LESS THAN 200,000

		(in 000)	
Towns	Population	Towns	Population
Bhatpara (Bengal) ..	177	Gaya ..	105
Surat ..	171	Jamshedpur ..	149
Calicut ..	126	Patna ..	176
Coimbatore ..	130	Jubbulpur ..	178
Salem ..	130	Ajmere ..	147
Trichinopoly ..	160	Baroda ..	153
Barcilly ..	193	Bhavnagar ..	103
Jhansi ..	103	Bikaner ..	127
Aligarh ..	113	Jaipur ..	176
Meerut ..	169	Jodhpur ..	127
Moradabad ..	142	Kolar (Gold field) ..	134
Saharanpur ..	108	Lashkar (Gwalior) ..	182
Shahjahanpur ..	110	Trivandrum ..	128
Jullundur ..	135	Mysore ..	157
Ludhiana ..	112		

Principal Ports

"A modern port is in effect an important junction, or point of transfer in overseas trade, either for a further voyage or to land transport—more particularly of course by rail, but also by inland water channels, whether natural or artificial and now by road to a constantly increasing extent."*

The fundamental importance of a port consists in the extent and productiveness of its hinterland. Hinterland means a region to which a port acts as "door". The extension of facilities of transportation determines the size of a hinterland while the productivity is measured by its products and density of population.

There are two classes of ports in India: major and minor. "The sheltered nature of a port, the well-laid-out approach channels, the provision of docks, jetties and moorings, the well-laid-out transit sheds, the effective rail connections, the ability to serve a very large portion of the hinterland lying behind the port, the facilities for meeting the requirement of defence and strategy, the comparatively large volume of traffic and the possibilities of work for shipping all the year round, usually distinguish a major port from a minor port."

India is a vast country with a coast-line of about 2,000 miles. Unfortunately, her coast-line has few indentations and consequently she has only a few major ports for trade. The southern side is deficient in harbours to accommodate large vessels now employed in sea-borne trade. The violence of monsoon keeps the ports of the western coast of India, with the exception of Bombay and Mormugao, closed to traffic from May to August. Then, again, the eastern coast is surface-bound and as such requires constant dredging.

The chief ports of India are Bombay, Mormugao, Mangalore, Tellicherry, Mahe, Calicut, Cochin, Tuticorin, Nagapatam, Pondicherry, Madras, Masulipatam, Vizagapatam, Cocanada and Calcutta. But of the total sea-borne trade of India, more than 90 per cent. is shared by Bombay, Calcutta, Cochin, Madras and Vizagapatam. The ports on the coast of the Deccan have restricted hinterlands, but recently some of them have been enlarged by the development of railways and other communications.

* Capital • 26th March, 1936.

SHARE OF PORTS IN FOREIGN TRADE IN 1934

(Total in value of crores of rupees)

	Import	Export	Total
Bombay	46·16	29·49	75·65
Calcutta	32·12	58·45	90·57
Madras	11·18	9·7	20·88
Vizagapatam ..	0·7	·39	·46
Total of India's trade	90·16	98·03	187·56

In 1948-49, the position of the different ports in respect of turnover cleared was as follows .

	million tons			million tons
Calcutta	8	Cochin .. ..	..	2
Bombay	6	Vizagapatam ..	..	·50
Madras	2·50			

The concentration of India's ocean-borne trade in these major ports is due to a number of causes. Geographical cause is no doubt important, but the more important is the historical one. Bombay, Madras and Calcutta have been centres of administration for a long time. Population increased and with it commercial and industrial activities were inspired. Moreover, the railway systems were constructed from these ports during the latter half of the 19th century. Thus from political and railway centres they developed into great ports.

THE PRINCIPAL PORTS ON THE WESTERN COAST OF INDIA

Kathiawar ports are Okha, Bedi Bander, Porbandar and Bhavnagar. Bedi Bandar, in Nawanagar, is a small port which does considerable coastal trade. The sea is shallow and therefore large steamers must anchor about 2 or 3 miles away from the shore. Okha, in the Baroda State, occupies a very good position at the extreme north-east point of the Kathiawar Peninsula. Although the sea in this part is deep enough for large vessels, the circuitous approach to the port makes navigation rather dangerous and the scanty population and small railway mileage of the hinterland stands in the way of its development. The port is open at all seasons of the year and competes some-

times with Bombay by offering lower port charges. The imports are textile machinery, motor cars, sugar and chemicals. The exports are oil-seeds and cotton.

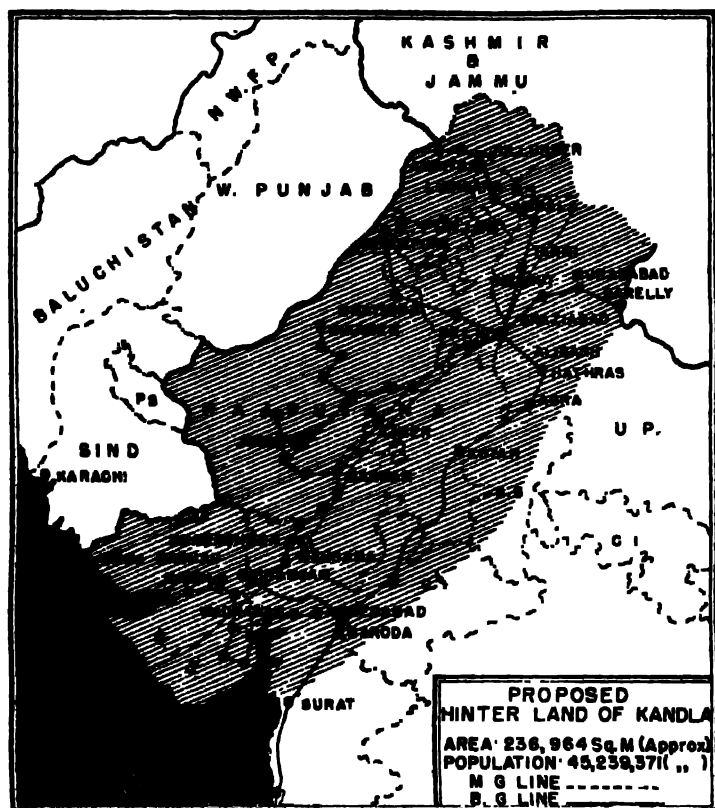


FIG No. 116. In area, it will be the third largest hinterland in the Union.

There is at present no major port on the Kathiawar—Cutch coast. With the loss of Karachi, the 1000 mile long coast line between Bombay and Karachi is badly in need of a major port to serve the hinterland. The Government of India have decided to develop *Kandla*, a small port of minor importance into a major port.

Kandla creek, situated at the eastern end of the Gulf of Cutch constitutes a natural sheltered harbour and is easily navigable. It has a depth of water of over 30 feet. The

geographical position of the port is best situated to replace the port of Karachi in its services to the hinterland. As between Kandla and Karachi, Delhi is 656 miles from Kandla as against 783 miles from Karachi. Similarly Hissar is 688 miles from Kandla as against 733 from Karachi. Moreover, potentialities for development of industries and mineral resources in the territory of Cutch are vast, in particular fishing, cement, glass, gypsum, lignite and bauxite. The present disadvantages of Kandla are non-existence of trade facilities and rail-communications. But it is possible to construct in three years' time two rail connections—one from Jhund to Kandla with a bridge over the little Runn of Cutch and the other from Radhanpur to Kandla.

Bombay lies at the base of the Western Ghats. It has a natural harbour directly on the sea. The hinterland of Bombay extends from Hyderabad and the western part of Madras in the south to Delhi in the north, and includes Western U. P., Eastern Rajputana, C. P., Central India and the Bombay Presidency. it is

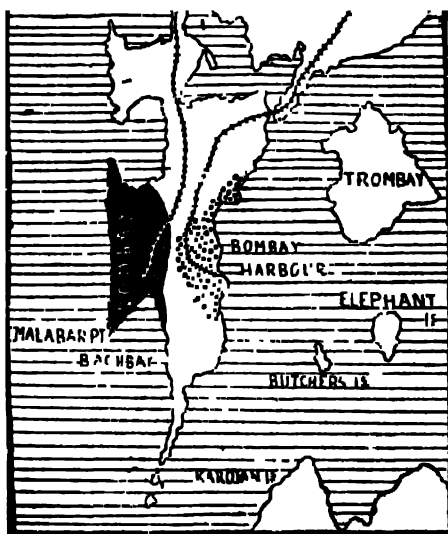


FIG No 117 Bombay is an inland port. It is connected with the mainland by railway bridges.

the second city in the Indian Union and owes its importance to its magnificent harbour and its position as the nearest Indian port to Europe. It is connected with the interior by railways (G. I. P. Railway and B. B. & C. I. Railway). It is the seat of the cotton textile industry. Although Bombay does not possess rich coal-fields within 200 miles or a system of navigable rivers to bring produce down to the port, her volume of trade is always large in view of her natural harbour which is open at all times of the year. Bombay is the principal outlet for the staple products of Western India, in particular, the raw

cotton of the Deccan. Large quantities of oil-seeds, wool and woollen goods, hides and skins, manganese ore and foodgrains are exported. The principal imports are manufactured cotton goods, machinery, railway plant, iron and steel goods, hardware, sugar, kerosene oil, dyes, coal and petroleum. In the year 1933 Bombay had a foreign trade of the value of Rs. 150 crores. (Imports Rs. 90 crores and exports Rs. 60 crores).

Mormugao, on the Konkan coast, is situated on the eastern extremity of the Mormugao peninsula in Portuguese India. Its hinterland extends to Bombay-Deccan, Hyderabad and Mysore. Manganese, groundnuts, cotton, coconuts etc., are the principal exports.

Calicut, 90 miles north of Cochin, is a port of periodical importance. During the early part of the monsoon, the port is practically closed to navigation. As the sea is shallow, steamers anchor about three miles off the shore. Coir, coir-fibre, copra, coffee, tea, ginger, groundnut and fish manure are the exports.

Cochin, in Madras, is the most important port between Bombay and Colombo. Its position is such that it can serve the whole of Southern India. Cochin is nearly 300 miles nearer to Aden than Bombay. "The system of back-waters running parallel with the coast affords cheap transport and excellent waterways connecting several places of importance in the Cochin and Travancore States." Coir, yarn, coir mats and mattings, copra, coconut oil, tea and rubber are the chief exports from Cochin.

THE PRINCIPAL PORTS ON THE EASTERN COAST OF INDIA

Tuticorin, an important port of the Madras Presidency, is situated at the extreme south-eastern point of the Peninsula. The harbour is shallow, and constant dredging is necessary. Cotton, tea, senna leaves and cardamoms are the principal exports. The port has considerable trade with Ceylon. The value of foreign trade in 1938 was worth Rs. 10 crores, of which exports amounted to Rs. 55 crores.

Madras, the third largest city in India, is the chief port of the Presidency. Several railway lines connect it with Bombay, Tuticorin, Calicut and Calcutta. Although the port has considerable manufactures, it cannot be compared with Calcutta or Bombay as a trade centre. Its extensive hinterland

includes the whole of the Eastern Deccan, but then this area does not produce things which are required by the European markets in large quantities. Moreover, many small sea ports on the Coromondal and Malabar Coasts compete with Madras. Madras handles only some 5 per cent. of India's foreign trade. Its harbour is artificial. Before the construction of the harbour, Madras was an open roadstead with a surf-beaten coast. The imports are cotton piece-goods, iron and steel, machinery, dyes, sugar, leather goods, paper etc. The chief exports are oil-seeds, raw cotton, coffee, tobacco, rubber and fish. It is also an industrial town, but lack of coal is its great handicap. The value of foreign trade in 1938 was to the extent of Rs. 34 crores, of which exports accounted for Rs. 18 crores.

Vizagapatam: It has become a major port within very recent years. It is a port of call for all ocean-going and coastal traffic steamers. It is situated on the Coromondal Coast, about midway between Madras and Calcutta—500 miles south of Calcutta and 325 miles north of Madras. Manganese, ground-nuts, myrobalans, hides and skins are the chief exports. The imports are sugar, cotton, piece-goods, iron, timber and machinery.

For shipping the produce of Orissa and the eastern part of C. P., Vizagapatam offers better facilities in respect of distance and charges than Calcutta. To a certain extent Calcutta has been affected adversely by the opening of this young port. Recently a ship-building yard has been opened here. The port is connected by the B. N. R. with Raipur in C. P. The opening of the line has greatly reduced the distance to C. P. markets.

Calcutta, the largest city in India, is situated on the left bank of the Hooghly, nearly 80 miles from the Bay of Bengal. Although primarily it is a port for the Gangetic plain, it is also the greatest trading centre to the east of the Suez. Its hinterland comprises Assam, Bengal, Bihar, the United Provinces and parts of the Eastern Punjab, Orissa and Central Provinces, which are all connected with Calcutta by roads and railways. All these areas produce in large quantities goods which are wanted by foreign markets. The Ganges and the Brahmaputra by providing splendid natural waterways help to bring agricultural produce of the plains to be exchanged for the manufactured goods in Calcutta.

The port of Calcutta, which extends for about five miles along the banks of the Hooghly, suffers from the disadvantage of its river being silted up. The frequent formation of tidal bore in the Hooghly is another difficulty. In spite of these

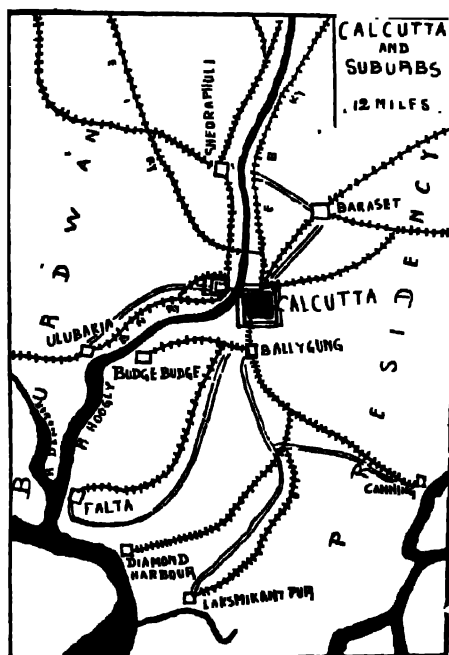


FIG. NO. 118 Calcutta and its suburbs

defects, Calcutta held during the World War II the record of being the fastest cargo-handling port in the world. The port authorities are planning the provision of greater facilities for incoming and outgoing ships. A proposal is being examined for a 30-mile ship canal from Kidderpore to Diamond Harbour.* Calcutta with its suburbs is the greatest manufacturing area in India. Its jute mills, paper mills, cotton mills, sugar factories, engineering works etc., use coal of Raniganj and Jharia. Calcutta is the greatest jute centre of the world. (Other industries of

importance are rice mills, cotton mills, tanneries, perfumeries, iron and steel works and match making. The principal exports are jute, tea, rice, wheat, mica, coal, iron, manganese, iron and steel goods, sugar, petroleum, motor car, paper, chemicals, liquor, salt, rubber and cycle. The value of foreign trade in 1938 amounted to Rs. 140 crores. (Exports Rs. 85 crores and imports Rs. 55 crores.)

* The proposal for connecting the port of Calcutta with the Sea by a ship canal.

There is no deep water harbour in Calcutta and the vessels beyond 9,000 tonnage have to dock at Diamond Harbour, 40 miles down Kidderpore. To increase the port facilities, it was proposed to connect the port of Calcutta with Diamond Harbour by a ship canal. This idea of ship canal is not new, and as a matter of fact this proposal was examined seriously in 1945.

Trade Centres

Trade centres have grown in six different classes of cities in India. These are: (i) holy cities, (ii) ancient capitals, (iii) ports, (iv) health resorts, (v) manufacturing cities, and (vi) modern administrative capitals.

India is a land of *holy cities*. Benaras, Puri, Allahabad, Mathura, etc., have become important trade centres because of the assemblage of pilgrims. Some of the *ancient capitals* of India like Nagpur, Poona, Murshidabad, etc., are still important as centres of trade. *Health resorts* are mostly confined to the sea-sides and the hills where people in large numbers from the plains go for a change. *Ports and manufacturing centres* in India command the largest trade because of railways and navigation facilities. Administrative reasons have also led to the development of many towns in districts, divisions and provinces of India.

The inland trade centres of India are mainly to be found in the Indo-Gangetic plain which is favoured by two mighty rivers—the Ganges and the Brahmaputra. The industrial centres have all grown on the banks of these rivers and their tributaries or at the junctions of railways.

The *United Provinces* of Agra and Oudh have an area of 110,000 sq. miles and a population of 55 millions. The important trade centres are Allahabad, Benares, Kanpur, Gorakhpur, Lucknow, Mirzapore, Moradabad, Aligarh and Agra.

Apart from the question of heavy expenditure on the scheme, the main difficulty will be that many villages between Diamond Harbour and Kidderpore will have to be destroyed in the process of execution of the scheme entailing not only hardship on thousands of villagers but also loss of rice fields.

Another problem is the Hooghly itself. If the canal is constructed, the Hooghly will not receive the proper attention. It must not be forgotten that "the Hooghly provides the only outfall channel for the rivers of West Bengal and its abandonment would not only aggravate the flood menace during the rains, but that the whole area would as a consequence get water-logged and unproductive." The Nadia rivers are also linked up with the Hooghly, both upstream and downstream of Calcutta. Therefore, the Hooghly should be revitalised by the infusion of fresh water from the Ganges so that upstream and downstream navigability of the Hooghly may improve. The Government of India has taken up in hand the *Ganges Barrage scheme* which if completed will make the entire length of the Hooghly navigable by bigger vessels. In that event, the port of Calcutta will develop further without having a ship canal.

Allahabad, 564 miles from Calcutta, is the principal railway centre of the U. P. It is situated on the confluence of the Ganges and the Jumna. There are several oil mills, glass factories and flour mills in the city. The trade is considerable, because the city enjoys unique advantages in regard to communication by rail, roads and rivers. Jowar and bajra, linseed, tobacco etc., are collected from the surrounding districts for export. *Benares*, on the bank of the Ganges, is one of the biggest towns of India. The city being a place of pilgrimage to the Hindus, the pilgrim traffic is enormous. It is also an important industrial and commercial centre. Toys of wood, zarda, lac bangles, ivory articles, silk cloth, blanket sheets, linseed, mustard seed, sugar and gram are the chief articles of trade. There are several oil mills and silk factories. The place is also noted for brass-works. The famous Hindu University is situated at a distance of three miles from the city. Kanpur is a great collecting and distributing centre for Northern India. It is also an important railway junction of E. I. Railway, B. B. & C. I. Railway, O. T. Railway, and G. I. P. Railway. It has the largest manufacturing industries in the U. P. Cotton pressing and ginning are the foremost. Sugar mills, flour mills, iron foundries, chemical works, cotton mills and oil mills are the important industries. The population of the city is over 2,50,000. *Gorakhpur* is situated on the left bank of the river Rapti. The chief industry is carpentry. Timber is brought here from the Nepal border. The city has a large number of sugar factories. *Lucknow* is an important distributing centre for the rich agricultural produce of Oudh. The city is growing in importance rapidly. There are several railways and iron foundries. The articles of trade are silver and gold-works, ivory and wood carving, pottery and perfumes. *Mirzapore*, an important industrial town in the U. P., is situated on a fertile tract of land on the bank of the Ganges. Carpets, rugs and silk cloths are the chief manufactures. Its stone business is also famous. *Moradabad*, the most important town of the district of Moradabad, is noted for brasswares. It has a population of 1,10,000. *Agra*, on the Jumna, is an important centre of arts and manufactures. The articles of trade are carpets, shoes, brass utensils, looking-glass frames and marbles. It is an important railway junction. It is also a collecting and distributing

centre for Rajputana. The famous Taj is situated at a distance of one mile from the city. *Aligarh* is famous for its manufacture of locks and other brasswares. Bangles, glasswares and butter are other articles of importance. It is the seat of Muslim culture in India.

The *East Punjab* has an area of 48,000 sq. miles. Its population, excluding the native States, is a little above 13 millions. The important trade centres are Amritsar, Ludhiana, Jullundur and Simla. *Amritsar* stands on the main line of the E. P. Railway and is 1,143 miles away from Calcutta. It is famous for its carpets and shawls. The other important industries are the manufacture of textiles, acids, chemicals, hosiery and leather. *Ludhiana* is the centre of hosiery manufacture. Ludhiana supplies turbans practically to every Indian regiment. *Simla* is the summer capital of the Government of India. It has an entrepot trade with Tibet and China. Its trade is generally busy from March to October.

The *Central Provinces* has an area of 130,000 sq. miles with 17 millions of people. Nagpur, Yeotmal, Katni, Wardha, Jubbalpore, Akola and Amrpati are the principal market places. *Akola* and *Amrpati* are the two chief centres of cotton trade. *Jubbalpore* is noted for cement, glass, lime and potteries. It has a gun carriage factory. Its other industries are cotton textiles, brass and copper utensils, etc. *Katni* is an important centre for utensils, stones and grains. *Nagpur*, the capital of the Central Provinces, is a very important commercial town. It is situated at the junction of the G. I. P. Railway and the B. N. Railway. Its cotton trade is important. *Yeotmal* and *Wardha* are important cotton marts and have ginning factories.

West Bengal is a densely populated province. It has an area of 28,000 sq. miles and it contains a population of more than 21 million people. The important trade centres are Calcutta, Serampore, Berhampore and Burdwan. *Serampore* and *Salkea* are two important industrial towns, situated near Calcutta. Both the towns possess a number of cotton mills. *Batanagar* on the Hooghly, is a new industrial place, famous for shoe-making.

The *Bombay Presidency* has an area of 152,000 sq. miles with more than 24 million people. The trade centres are Bombay, Ahmedabad, Belgaum, Broach, Nasik, Poona and Surat.

Ahmedabad stands on the left bank of the Sabarmati and is 50 miles away from the head of the Gulf of Cambay. It is the second largest cotton manufacturing centre in India. There are nearly 80 cotton mills. *Belgaum* is a silk and cotton centre. *Broach* has large coastal trade. It is one of the oldest ports of Western India. *Nasik* is noted for brass and copper vessels. *Surat*, once an important port, is to-day famous for gold and silver-thread industry. There are a few cotton mills.

In the *Madras Presidency*, the principal trade centres are ports. The province has an area of 142, 227 miles. *Madura* and *Trichinopoly* are the two inland trade centres. *Madura* has several weaving mills. Copper and brass vessels are also made. In *Trichinopoly* there are many cigar factories.

Delhi, the capital of India, is situated at the junction of many railway lines. It is an important clearing house for the East Punjab and the western districts of U. P. in cotton, silk and woollen piece-goods. It has several cotton spinning and weaving mills. Ivory carving, jewellery works, lace works and gold embroidery are the other important activities.

Assam is the most easterly province of India. It has an area of 55,000 square miles with 10 million population. The province is rich in natural resources and holds out immense possibilities for many industries. Forests cover 38 per cent. of the total area. Agriculture is mainly confined to the Brahmaputra valley, and the principal products are rice and tea. The trade centres of the province are Shillong and Gauhati. Paper pulp is also made here. *Shillong*, the capital of Assam, is in the Khasi Hills on an altitude of 4,000 ft., above sea level. Fruits and hill-products are the articles of trade. The population is more than 30,000. *Gauhati*, on the left bank of the Brahmaputra, is the largest town and the most important port of Assam. It has a population of more than 35,000. Gauhati is a commercial centre and handles as a port or a railway centre, silk, tea and timber.

Orissa has an area of 32,000 sq. miles with a population of more than 8 millions. Though rich in resources, the province is very backward in industrial development. The principal trade centres are Cuttack, Puri, Sambalpur and Balasore. *Cuttack*, the capital of Orissa, has a population of more than 70,000. The local manufactures comprise lac bangles, shoes, toys

and combs. It also collects timbers from C. P. and other places and sends them to Calcutta by the B. N. Railway. It is on the main line of the B. N. Railway running between Madras and Calcutta and is connected by the 'Orissa Coast Canal' with Chandbali. The city is 253 miles from Calcutta. *Puri*, a holy place of the Hindus, is an open roadstead. As the sea is shallow, the steamers anchor about 7 miles away from the shore. The local manufactures consist of brass, silver and golden ornaments. *Sambalpur* is an important silk and cotton weaving centre.

INDIAN STATES

The States of Indian Union have been grouped as follows :

(a) *States Union* : (i) Vindychal Pradesh, (ii) Himachal Pradesh, (iii) Saurashtra, (iv) Madhya Bharat, (v) Greater Rajasthan,* (vi) Matsya, (vii) East Punjab States Union (Pepsu) ; (viii) United States of Cochin and Travancore.

(b) *States acceded to Indian Union* : Hyderabad, Mysore, Kashmir, Cooch-Bihar, Manipur, Tripura, Khasi Hills, Mayumbhanj, Junagadh, Rampur, Bhopal, Kolhapur, Cutch.

(c) *States merged in Provinces* : The Eastern States, Bastar, Western India, Gujrat States and Baroda.

* From March 30, 1949 the Rajasthan Union is known as the Greater Rajasthan because of the inclusion of Jaipur, Jodhpur, Bikanir and Jaisalmer. The greater Rajasthan has 121 square miles of area with 112.3 million population. Thus in area the greater Rajasthan is greater than the United Provinces.

The agricultural production is very low as the soil is sandy and ill-watered. In the east and south, however, the soil is comparatively productive.

The principal crops are wheat, barley, gram, bajra, millets, rice, til, mustard, cotton, tobacco, groundnut and opium.

Vast tracts of barren land on the west can be brought under cultivation if water-supply can be made available. Dry-farming can also be introduced.

Silver, copper, iron, zinc, lead, mica and coal are found in various states. At present iron, mica, building stone, salt and soapstone are worked. Rajasthan is the biggest supplier of salt in Indian Union.

There is great scope for industrial development. Cotton mills, cement factory and woollen mills are already in existence.

Greater Rajasthan States : Bundi, Jhalwar, Kotah, Kishangarh, Shahpura, Tonk, Barswara, Dunganpur, Kusalgarh, Pratapgarh, Udaipur, Jaipur, Jodhpur, Bikanir and Jaisalmer.

From the point of view of size, Jodhpur (36,120 sq. miles) is first but in population, Jaipur leads (30.4 million).

In the *Indian States*, there are many trade centres. *Jaipur*, the capital of the Jaipur State in Rajputana, has a population of more than a lakh. It is famous for its artistic pottery and brassware. *Jodhpur*, the capital of the Jodhpur State, has a railway workshop and woollen and cotton mills. Stone-works are also

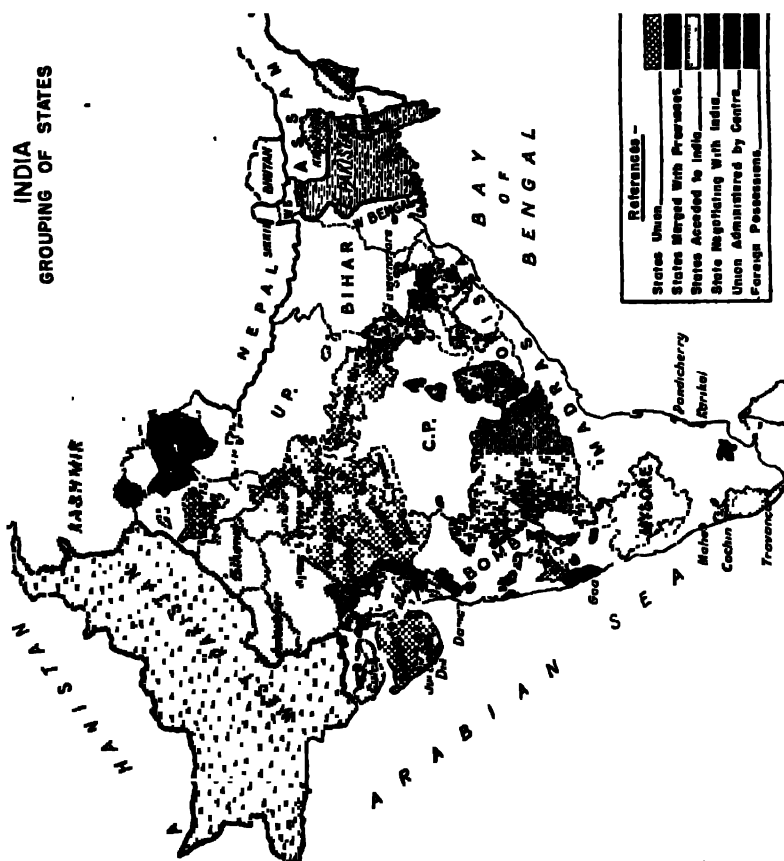


FIG. No. 119. This map refers to position before Hyderabad had acceded to the Union

important. *Gwalior*, the capital of the State, has a population of nearly 1 lakh of persons. The name of the city is Lashkar. It has important stone-works and cigarette manufactures. The city also boasts of many cotton mills and pottery works. *Indore*,

the largest trade centre of Central India, has cotton mills, flour mills, brasswork foundries and metal-works. It has more than a lakh of population. *Bangalore* in Mysore State is 220 miles east of Madras. Carpets, cotton textiles, woollen goods and leather are the principal manufactures. Soap, shellac, furniture and porcelain are also made. The population is nearly half a million. *Srinagar*, the capital of Kashmir, is famous for silk, embroideries and carved woodwork. A large hydro-electric works has been installed at Buramulla to supply power to Srinagar. The city has a population of over 1,80,000. It has no railway communication, but excellent motor roads connect the city with the neighbouring areas.

QUESTIONS

1. Account for the variety in the distribution of rainfall in India, and show its effect on the chief products. (Cal. Inter 1941)
2. Divide India into natural regions. Describe the climate, products and industries in each of them. (Cal. Inter. 1948, W.B.C.S 1949)
3. India has a population of above 350 millions. Analyse the factors which determine the irregular distribution of population in India. (Dacca Inter. 1941; Cal. Inter 1934, 1940, 1942.)
4. Examine and estimate the importance of the following agricultural products in India: (a) Wheat, (b) Rice, (c) Maize, (d) Cotton and (e) Jute. (Cal. Inter. 1932, 1935)
5. On a sketch map of India, locate the places where hydro-electric power is being utilised for irrigation purposes. What manufacturing industries, in your opinion, can be developed in these places? (Cal. B. Com. 1927, 1938.)
6. On a sketch map of India, show the regions where iron, manganese and mica are found. Which of these minerals are mined for home consumption? Name the countries of the world that compete with India in manganese for export markets. (B. Com. 1937.)
7. Describe the principal coal-fields of India and discuss the present condition of the coal industry in India. (Cal. Inter. 1938)
8. Examine the iron resources of India. Show how far these are located near the coal-bearing areas in India. (Cal. Inter. 1936.)
9. On a sketch map of India, show the regions with important timber resources. How are these utilised at present? Discuss the prospects of increasing exports of Indian timber to the world's markets. (Dacca Inter. 1940; Cal. B. Com. 1941, Inter. 1942.)

10. Examine the present position and the future prospects of the fishing industry in West Bengal (W.B.C.S., 1949.)
11. On a sketch map of India, show the important regions of wood production together with the centres for imported wool. Where is the Indian wool mainly consumed? (B Com 1941.)
12. How is it that in India most of the hydro-electric installations are located in the Deccan? Discuss the factors which should be present for the development of hydro-electric power. (Cal Inter. 1949)
13. Examine the possibilities of developing cotton and sugar industries in Bengal (Cal Inter 1939)
14. Discuss the prospects and possibilities of revival of land trade routes between Central and Eastern European countries on one side and India on the other. (B Com 1940.)
15. For the development of communication facilities in India, would you favour extension of railways or construction of roads, or both? Give your reasons. (Cal Inter. 1940.)
16. Discuss the possibilities of linking up the Indian railways with railways in other countries of Eurasia. Examine the probable effects of such linking up on the overland foreign trade of India. (I I B 1931)
17. Give a brief account of the articles which enter and the countries which participate in the external trade of India carried on by land routes. What steps should be taken for its improvement? (B A Hons 1941.)
18. Have you got any idea about the trade which India carries on with other countries by land route? What are the countries which participate and the commodities which enter in this trade? (Cal Inter 1941)
19. Write a short essay on the foreign trade of India stating (a) imports and their sources, and (b) exports and their destinations (Dacca Inter. 1940; Cal. Inter. 1933, B Com. 1937)
20. What is hinterland? Give an idea of the hinterland of Calcutta and Bombay (Dacca Inter 1940, Cal Inter. 1938)
21. Discuss the importance of the following: (a) Tuticorin, (b) Colombo, (c) Ludhiana, (d) Cawnpore, (e) Digboi, (f) Ahmedabad, and (g) Murshidabad. (Cal. Inter. 1940.)
22. State briefly the present condition of the Indian paper industry. Name the indigenous raw materials used for manufacturing paper and mention where they are found (Cal Inter 1942.)
23. Describe the present position of Chemical Industry in India. In what direction is expansion possible in this industry? (Cal. B.Com. 1943.)
24. Describe the changes that have taken place in recent years in the localisation of the ship-building industry of the world. What is India's share in this industry? (Cal. B. Com. 1943.)
25. On a sketch map of India, show the important regions of production of food-grains. How is it that acute shortage of food-stuffs is being felt in many parts of the country? (Cal. B. Com. 1943.)

26. (a) Describe the nature of the present-day trade between India and U. S. A. (Cal. B. Com. 1943; Delhi U. 1949.)

(b) Analyse the nature and direction of U K trade with Indian Union. (W B C.S. 1949.)

27. On a sketch map of India, show the principal air routes—both trunk and feeder—in operation within the country (Cal B Com. 1944.)

28. On an outline map of India indicate the Gondwana coal-fields and Tertiary coal-fields. Which of these is the most productive? What are the reasons for an acute shortage of coal in India in recent years? (B Com. 1945)

29. (a) Discuss the part played by the railways for commercial development of India. Do you think India should now pay more attention to the construction of roads and waterways than railways (Cal. Inter 1949.)

(b) For making India self-sufficient in the matter of food, what planning would you advocate? (Cal B Com 1949)

30. Answer any two of the following—

(a) How would you account for the fact that the silk industry has declined in Bengal, but continues to develop in Kashmir and Mysore?

(b) What geographical factors have determined the distribution of the woollen industry in India?

(c) What is the future of the paper industry in India?

31. Analyse the geographical conditions suitable for the development of hydro-electric power. How far are these conditions in existence in India? (Cal. Inter 1945, Cal. B. Com. 1948.)

32. Name the two important fibres produced in India. Give an account of the conditions favourable for their large-scale production and their manufacture into finished products. (Cal. Inter 1945.)

33. "India is the leading Mica-producing country in the world, and is likely to remain so"—Examine the statement (Cal Inter 1945)

34. Write short informative accounts of two of the following: (a) Irrigation in India, (b) Sources of fish-supply in India, (c) Importance of sericulture in India's commerce. (Cal Inter. 1945.)

35. Name the three principal industries of West Bengal. State very briefly the circumstances which favoured their development.

36. Discuss the commercial importance of any five of the following. (a) Kalimpong, (b) Dibrugarh, (c) Kanpur, (d) Jharin, (e) Vizagapatam, (f) Nagpur. (Cal Inter 1945.)

37. Draw a sketch map of India indicating areas having a large raw cotton production and the more important places where cotton mills are located. Also comment on such localization of the cotton industry. (C U, Inter. 1946.)

38. Is India rich in forest products? Mention the regions where these are available and their principal uses. (C. U., Inter. 1946.)

39. Name the five important oil-seeds of India, describing the areas where they are produced and the uses to which they are put. (C U., Inter. 1946.)

40. Does Calcutta possess advantages for being situated on the river Hooghly? Give an idea of the hinterland of this port and the principal articles of export and import.

(C. U., Inter. 1946; W.B.C.S. 1949.)

41. (a) The growth of Cawnpore as an industrial centre in recent years has been phenomenal. State the causes. (C. U., Inter. 1946.)

(b) Why was Jamshedpur selected by the Tata's for location of their Steel Company? What subsidiary industries have been established there? (C. U., Inter. 1946.)

42. What are the essential conditions for the development of fishing industry? Do you think that Bengal and Assam possess such facilities? (C. U., Inter. 1946.)

42 (a) Draw a sketch map of Indian Union, and indicate on it the principal air routes in operation within the country. Discuss possible lines of development, indicating the likely advantages to the nation (Delhi B.A. Com. 1949, W.B.C.S. 1949; Cal B Com. 1948)

43 Discuss the commercial importance of any five of the following .—

Jubbulpore, Jharia, Dibrugarh, Bangalore and Amritsar.

(C. U., Inter. 1946)

44. Draw a sketch map of India and indicate the regions where mineral deposits occur. Also state briefly their principal uses.

(C. U., Inter. 1947)

45 Discuss the conditions favourable for the production of jute. Name the principal buyers of Indian jute and jute manufactures.

(C. U., Inter. 1947)

46. (a) Discuss the irrigation system of India. Also state what you know about the Damodar Valley Project.

(C. U., Inter. 1947, Delhi U. Hons. 1949)

(b) What do you understand by the term *multi purpose project*? Also discuss fully the benefits likely to be derived when Damodar Valley project will be completed. (Cal B. Com. 1949.)

47. You propose to go by rail from Amritsar to Jamshedpur via Delhi and Nagpur. State the Railway systems over which you will travel and the commercial importance of these places (C. U., Inter. 1947.)

48. Give an account of the part played by the river Ganges in the economic life of India. (C. U., Inter. 1947)

49. India's sugar-industry is of recent growth. Mention the factors for its development and the provinces where mills are located.

(C. U., Inter. 1947.)

50 Comment on the proposal of connecting Calcutta port with the sea by a ship canal. Mention the disadvantages of ship canal.

(Cal. B. Com. 1949.)

51. What is meant by "coastal shipping"? Name the ports of importance in India's coastal trade and state the position of Indian shipping companies in the coastal trade of the country.

(Cal. B. Com. 1948.)

DOMINION OF PAKISTAN

The Dominion of Pakistan, until 14th August, 1947 a portion of India, was created because of the demand of the Muslims of India for a separate state.

The Dominion consists of two disproportionate regions—the smaller comprises the Eastern Pakistan, the larger is the Western Pakistan.

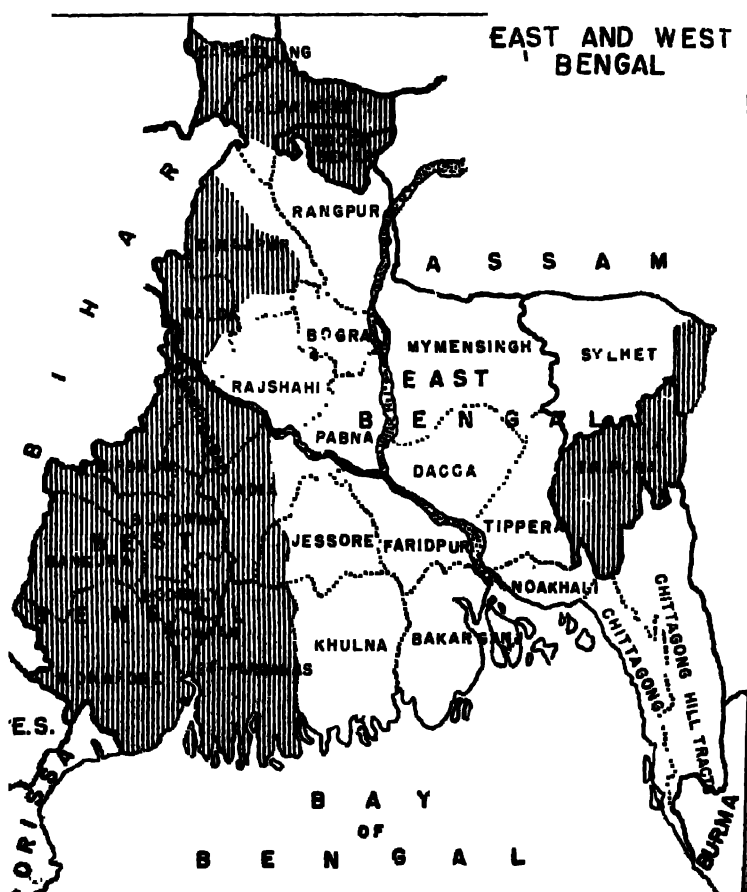


FIG No. 120. Map showing the division of Bengal The Eastern Pakistan comprises East Bengal and Sylhet.

AREA AND SIZE

The total area of Pakistan is 360,780 square miles and it is made up of four provinces of West Punjab, East Bengal, Sind and N. W. F. P., as well as the Beluchistan and the States. The three provinces of West Punjab, Sind and N. W. F. P., as well as the Beluchistan and the States constitute the *Western Pakistan*, while East Bengal and Sylhet form the *Eastern Pakistan*. The Eastern Pakistan is about one-sixth of the total area of the Western Pakistan.

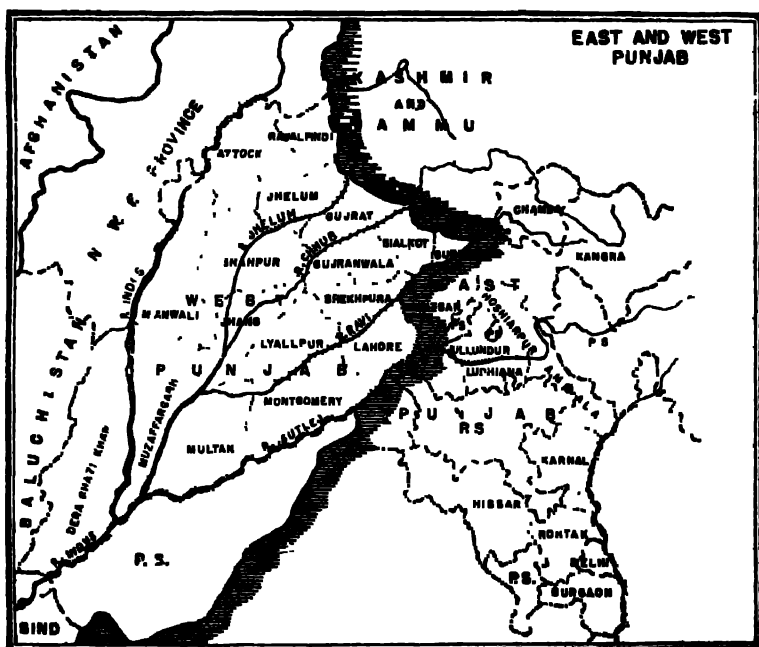


FIG No 121 Map showing the division of the Punjab to West Punjab and East Punjab

Provinces	Area in square miles		
(a) <i>Eastern Pakistan :</i>			
East Bengal	49,270
Sylhet district	4,650

Provinces	Area (In sq miles)
<i>(b) West Pakistan :</i>	
West Punjab . . .	62,000
Sind . . .	48,100
N. W. F. P. . . .	14,260
Beluchistan . . .	54,460
Bahawalpur State . . .	17,500
Beluchistan States . . .	79,500
Khairpur States . . .	6,000
N. W. F. P. States . . .	25,000
	<hr/>
	360,780
	<hr/>

The area of the country is a little less than that of Burma and is roughly equivalent to that of the United Kingdom and France combined

The Western Pakistan is separated from the Eastern Pakistan by 1,400 miles. Pakistan has a long coast line with a variety of interesting features. The Bay of Bengal is indented by a series of shallow channels and bays while along the Arabian Sea side, the coast line is relatively smooth.

POPULATION

According to 1941 census, the total population of Pakistan is 70 33 millions, and of these some 67 millions live in the provinces. Because of the annual increase in population as well as large influx from the Indian Union, population must be now over 75 millions. The average density of population is 195 per square mile, but its distribution is very uneven as more than 792 people per square mile live in East Bengal while it is 6 in Beluchistan. More than 73 per cent. of the population are Muslims. Out of the total population of Bengal, 35.14 per cent. are in West Bengal and 64.86 per cent. in East Bengal. The percentage of Muslims in West Bengal to its total popula-

tion is 25'01. Similarly the percentage of non-Muslims in East Bengal to the total population of that province is 29'17.

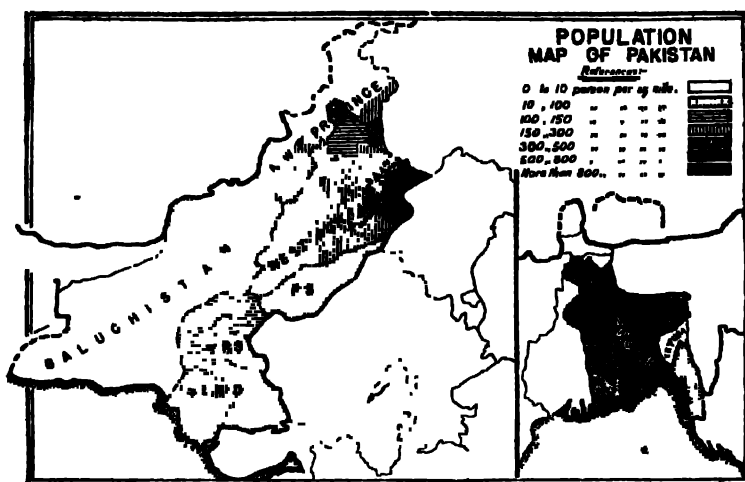


FIG. No. 122 Note the great concentration of population in the eastern part of Pakistan as well as in the canal colonies in West Punjab

The distribution of population by provinces is as follows :

<i>Western Pakistan</i>		<i>Eastern Pakistan</i>	
	<i>In million</i>		<i>In million</i>
West Punjab ..	.. 15'80	East Bengal ..	.. 39'7
Sind ..	.. 4'53	Sylhet ..	.. 3'0
N. W. F. P. ..	.. 3'04		
Beluchistan ..	.. '50		
Tribal areas ..	.. 2 38		
Bahawalpur ..	.. 1'34		
Other States ..	.. '67		

The Dominion is now the fifth largest country in the world in point of population, being preceded by China, Indian Union, U.S.S.R. and U.S.A.

About 92 per cent. of the population live in villages as against 86 per cent. in the case of the Dominion of India.

Natural Regions

From a geographical aspect, Pakistan may be divided into six regions.

- Western Pakistan* .. (1) Dry Plateau.
(2) North Western Dry Hills Regions.
(3) Arid Plains.
(4) Deserts.
- Eastern Pakistan* .. (5) Wet Lowlands or New Delta Region.
(6) Ganges-Brahmaputra Doab.

(1) The whole of Beluchistan is a dry plateau and lies outside the influence of the monsoon. The climate is subject to extreme heat and cold with rainfall uncertain and scanty. Due to lack of water, only a small fraction of the country is under cultivation by means of "Karez" irrigation, or by flood waters from the rivers. The principal crops are millets, wheat and fodder. There is very little surplus, that little cannot easily be exported on account of the difficulties of transport. Fruits are extensively grown. Grapes, apricots, peaches, apples, pears and melons are important.

(2) The North West Frontier Province and the adjoining districts of the Western Pakistan belong to the Dry Hills Region. The rainfall nowhere exceeds 20 inches. Irrigation has been developed in the Vale of Peshwar and the Bannu plain where the population is the thickest. The region is outside the influence of the monsoon and most of the scanty rain falls in the cold season. The important crops are wheat, gram and millets.

(3) The plain encompasses the valleys of the Indus and its tributaries and covers the whole north-eastern and south-western and the southern portions of the Western Pakistan. The plain is drained by the five rivers Jhelum, Chenub, Sutlej, Ravi and Bias all of which join the Indus. The north-eastern plain is damper and grows crops without irrigation. The rainfall is between 10/20 inches. The western plain is very dry and all crops are irrigated.

The southern portion is dry alluvial plain stretching from the edge of the Beluchistan plateau to the Thar desert on the east. Agriculture is developed with irrigation along the Indus Basin. The rainfall is less than 10 inches.

(4) The desert covers the south of the Sutlej and the eastern portion of Sind.

(5) East Bengal is a new delta region. Every year huge quantities of silt are brought down by the rivers. During the monsoon period, a great part of the region is flooded, and a rich deposit of silt is spread over the country. This region is a land of rivers, and there are few roads. The rivers thread their way across the region and eventually flow towards the Bay of Bengal.

The rainfall is more than 75 inches everywhere, and soil is very fertile. Rice, sugar-cane and jute are the principal crops. The climate of East Bengal is sub-tropical with a high humidity.

(6) North Bengal is really a portion of the Ganges-Brahmaputra Doab. The surface is usually flat, broken here and there by low hills.

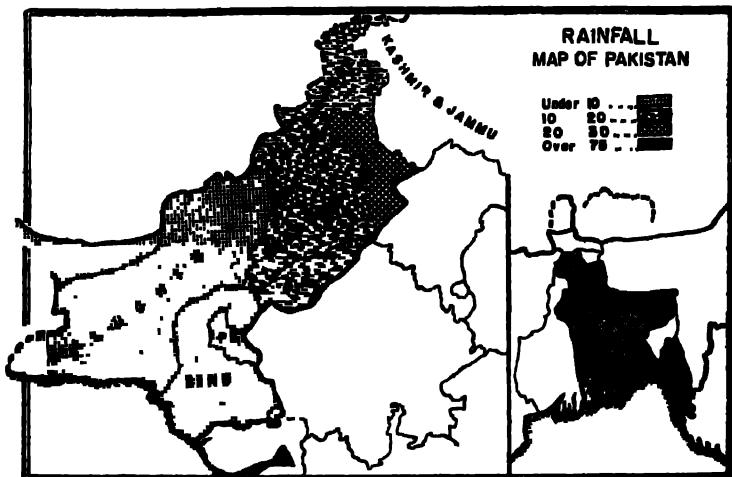


FIG. No 123 The Western Pakistan is a region of scanty rainfall :
Cultivation is possible only by means of irrigation

Irrigation

The importance of irrigation in the case of Western Pakistan can hardly be exaggerated. In the Western Pakistan, the rainfall is not only uncertain but also varies from year to year. The rainfall is under 10 inches in the whole of Sind, and Beluchistan, while it is between 10 and 20 inches in West Punjab and the N. W. F. P. Only the extreme eastern part of West Punjab receives more than 20 inches rainfall.

"One year in five may be expected to be a dry year, and one in ten a year of severe drought." The Western Pakistan therefore depends, to a great extent, for the cultivation on the irrigation works. About 34 per cent of the cultivated area of Pakistan are irrigated compared to 18 per cent. in the Indian Union.

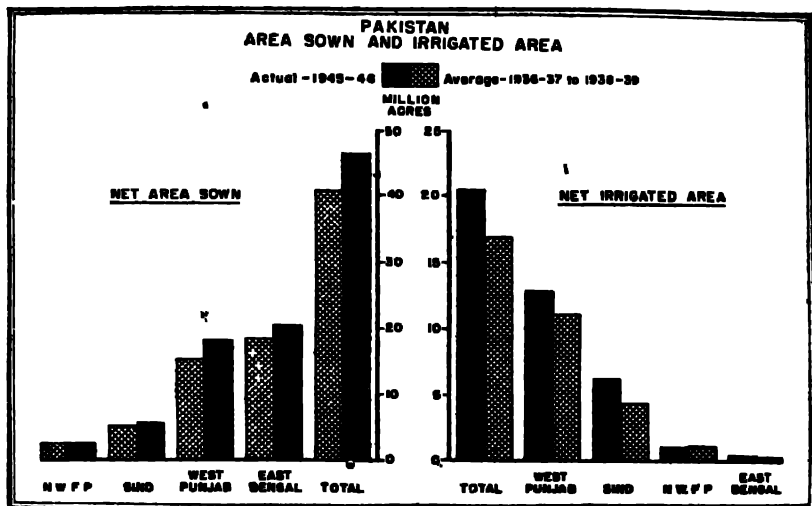


FIG No. 124. Note the importance of irrigation in the West Punjab and Sind.

The Western Punjab is a canal colony because the conditions are excellent for developing irrigation. The Indus and its tributaries spread out over the province like the fingers of an open hand. With the exception of the North-West, the province is flat with soft alluvial soil. The development of canal irrigation has transformed the Lyallpur and Montgomery districts which were more or less like semi-deserts, into fertile agricultural lands. About 14 million acres of land are irrigated by canals in Western Punjab.

(a) The largest irrigation work is the Lower Chenub Canal. It has 2,437 miles of channels and irrigates more than 2 million acres of land of the Lyallpur colony. It takes its water from the Chenub at Khamki and has turned a semi-desert tract into a rich agricultural area around Lyallpur, where population has increased with great rapidity after the opening of the canal system. Before its construction, the density of population in this

area was very sparse and never exceeded 10 people per square mile. At present there are more than 300 people per square mile.

(b) The Lower Jhelum Canal has 583 miles of 'channels and irrigates more than 8,60,000 acres of land of the Shahpur Colony in West Punjab. The head stream is at Rasul on the border of Kashmir State.

(c) The Upper Jhelum Canal takes its water from the Jhelum at Mangla in Kashmir and irrigates Gujrat lying between the Upper Jhelum and the Upper Chenub.

(d) The Upper Chenub Canal takes its water from the Chenub at Marala in Kashmir and joins the Lower Bari Doab Canal at Balloki on the Ravi. The canal was opened in 1912. The canal serves Sialkot, Gujranwalla and Shekhpura.

Most of the head streams as well as the sources of the Punjab canals are in the East Punjab or Kashmir.

Mention may be made of the *Triple Canal Project*—a magnificent engineering work. The lower Bari-Doab Canal does not possess sufficient water, because the Upper Bari-Doab Canal in East Punjab takes away much water from the Ravi at Madhopur. The Upper Chenub canal has, therefore, been connected with the Lower Bari-Doab Canal at Balloki. Again, owing to the existence of the Upper Chenub Canal, the Lower Chenub Canal does not possess sufficient water. By a bold engineering conception, the Upper Jhelum has now been connected with the Lower Chenub at Khamki. The entire project was completed in 1933.

In Bahawalpur an irrigation scheme is being implemented which will bring 260,000 acres of land under cultivation by 1950.

An area of nearly six million acres, that is more than 74 per cent. of the total area sown in Sind, is irrigated by canals. The Lloyd Barrage scheme is one of the marvels of engineering science. A great dam has been constructed across the Indus river by putting a barrage at Sukkur in order to control the waters of the river; from the dam, water is distributed by means of canals to different areas of Sind.

There is great scope for further development of canal irrigation in the western Pakistan. Four irrigation projects are already being worked out—two in the West Punjab and two in Sind. Besides, the Government has planned two multi-

purpose projects—one at Warsak in the N.W.F.P. and the other at Rasul in West Punjab. All these projects will make available a further twelve million acres of land for cultivation.

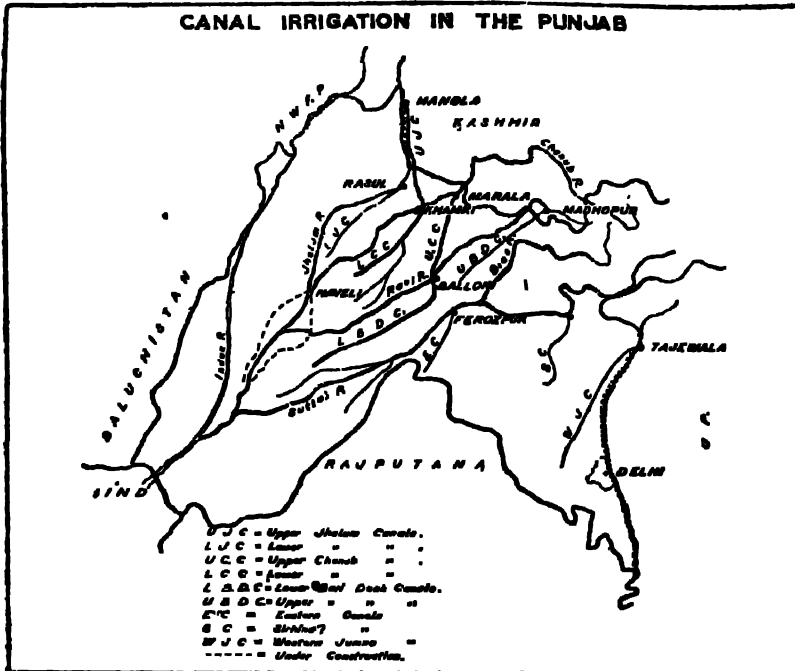


FIG. No. 125. In Undivided Punjab 165 million acres of land were irrigated by canals. Note after the division, the majority of the canal systems are in Pakistan.

The Warsak Multipurpose Project of the North-West Frontier Province will develop 100,000 K.W. of energy and provide facilities for irrigation to 60,000 acres of land in the Peshawar district and several thousand acres in Tribal areas, including a portion of the Khajuri plain, outside Jamrud. The project will enable the Kohat Valley to construct tube-wells for irrigation. The Warsak will supply power for working the Mullagori marble mines, four miles from Warsak dam, coal deposits in the Cheral hills near Peshawar and in the Kohat district, gypsum in Kohat, copper ore in the Mohmand country and subsidiary industries. It will also provide, by means of canals navigation between N.W.F.P. and West Punjab.

Wells are being introduced for irrigation in the Western Punjab. Small Power-pumps are used in well-irrigation, parti-

cularly in the districts of Lyallpur, Jhang, Sheikhupura and Sargodha. Mention may be made of "Karez", an underground system of irrigation which is extensively practised in Beluchistan. Here the soil is open and porous, and is composed of water-worn stones; but below the surface the soil is hard, impermeable and conglomerated. Therefore water is found flowing in many places below 20 or 30 feet from the surface, although on the surface itself there is no water. The water thus found is led gradually towards the surface through the Karez. A series of wells are dug at intervals of 15 to 25 yards, and connected below by an underground passage, through which the water runs till at last it reaches the surface and is utilised for irrigating the fields.

Agriculture

Out of 150 million acres of land in Pakistan, about 54 million acres are at present cultivated, the remaining being uncultivated.

The principal crops are wheat, rice, maize, sugar-cane, tea, jute, cotton, oil-seeds and tobacco. "Pakistan is an agricultural surplus area which can feed its own people, export some wheat and great deal of cotton and jute."

The great mass of the population are engaged in agriculture. A scheme is being drawn up for the mechanisation of cultivation in the Dominion on a co-operative basis. This will improve the lot of the farmers and increase the output. Mechanised cultivation has already begun in certain areas of West Punjab. In Beluchistan, mechanised cultivation will be concentrated on fruit cultivation. Mechanisation of agriculture will not be necessary in Sind as the completion of the lower and upper Sind barrage will automatically increase cultivation in the province. The Chengri Valley of the Chittagong Hill tracts is being developed for mechanised cultivation.

Food crops occupy about 85 per cent of the total cultivated area of Pakistan. About half of this area is in Eastern Pakistan.

The total area under foodgrains in Pakistan is normally about 35 million acres with a production of about 12 million tons. Of this, about 23 million acres are under rice with a production of nearly 8 million tons and 10 million acres under wheat with an aggregate output of 3 million tons. The remain-

ing acreage is under maize, millets and barley. Thus taking all foodgrains together and after providing for seeds, wastage and farm stocks, Pakistan has a surplus of 4 lakh to 5 lakh tons of foodgrains in a normal year.

YIELD & AREA UNDER FOOD CROPS*
(1945-46)

			Area (000 acres)	Yield (000 tons)
Rice	..	..	22,620	8,209
Wheat	..	..	10,431	3,126
Jowar	..	..	1,050	224
Bajra	..	..	2,387	524
Maize	..	..	989	431
Barley	..	..	497	129
Gram	..	..	2,947	626
Sugarcane	..	..	621	868
Edible oil seeds	..	..	1,402	239

Rice : It is the staple food of the people of Eastern Pakistan. About 23 million acres of land are under rice of which

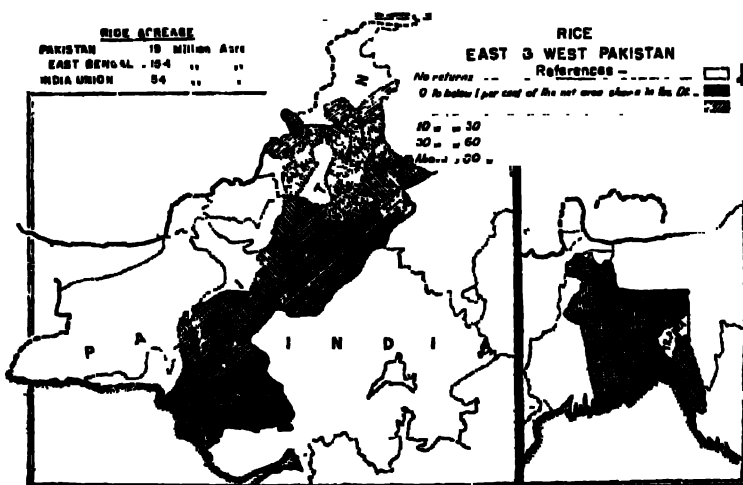


FIG. No. 126. Note the great concentration of cultivation in East Bengal where more than 60 per cent of the sown area account for by rice.

* Source : Estimates of area and yield of principal crops in India 1936-1946, Ministry of Agriculture, Govt of India.

East Bengal alone possesses 20 million acres. Sind and Sylhet have 3 million acres in total under rice, while West Punjab has little above half million acres. In every district of Eastern Pakistan rice accounts for more than 60 per cent. of the sown area.

Pakistan raises 8.2 million tons of rice annually to which Eastern Pakistan contributes 7.0 million tons. Normally the Eastern Pakistan is a deficit area in rice, and the deficit is met by supplies of rice from the Western Pakistan.

There are now 84 rice mills in Pakistan, all of which are located in East Bengal.

Wheat : It occupies 10 million acres of land and gives an yield of 3 million tons a year. It is mostly grown in the West Punjab, Sind and N. W. F. P.

WHEAT-AREAS IN 1946-47

Areas	(In 000 acres)	Areas	(In 000 acres)
West Punjab	.. 7,192	Sind	.. 1,248
N. W. F. P.	.. 1,087	States	.. 819

Wheat is cultivated in Western Pakistan in the month of November and December and is harvested in May. The average

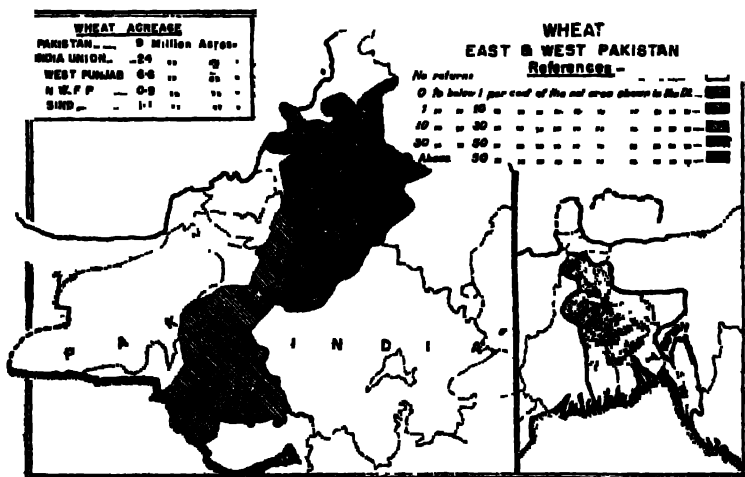


FIG. No. 127. In West Punjab, every district has more than 30 per cent of the sown area under wheat.

yield of wheat per acre in the West Punjab is 700 pounds and in Sind 600 pounds. The districts of Muzaffar Garh, Attock, Jhelum and Sialkot in the Western Punjab have between 50-60 per cent. of the net cultivated area under wheat in each. In Eastern Pakistan the monsoon discourages wheat cultivation although in small quantities it is raised in Malda, Rajshahi, Pabna and Nadia. The Western Pakistan is a surplus area in wheat and has therefore an exportable surplus.

The other food crops of Pakistan are *Maize*, *Pulses* and *Gram*. Maize is extensively grown in the West Punjab and N. W. F. P.

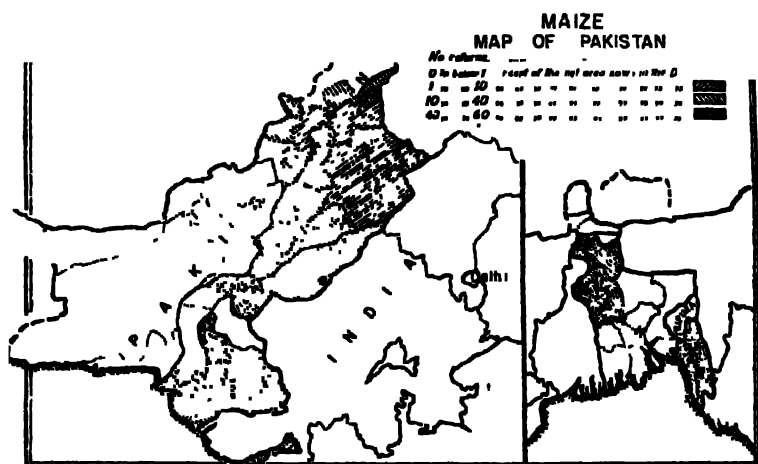


FIG. No. 128. The Central region of the N.W.F.P. and the northern area of West Punjab have the greatest acreage under maize.

In 1945-46, about 1 million acres of land were under maize in Pakistan. West Punjab and Sind share equally in acreage. The annual average production is about 400,000 tons.

In West Punjab, the districts of Rawalpindi, Attock, Jhelum and Gujrat have the largest acreage under maize. Recently the acreage under maize has also increased in Shekhupura, Sialkot and Gujranwalla. In Sind, maize producing districts are Sukkur and Hyderabad.

Gram covers approximately 3 million acres of which 98 per cent is in West Punjab. Small quantities are also raised

25,000 tons. The Dominion will have to depend for many more years on the imported sugar from the Indian Union.

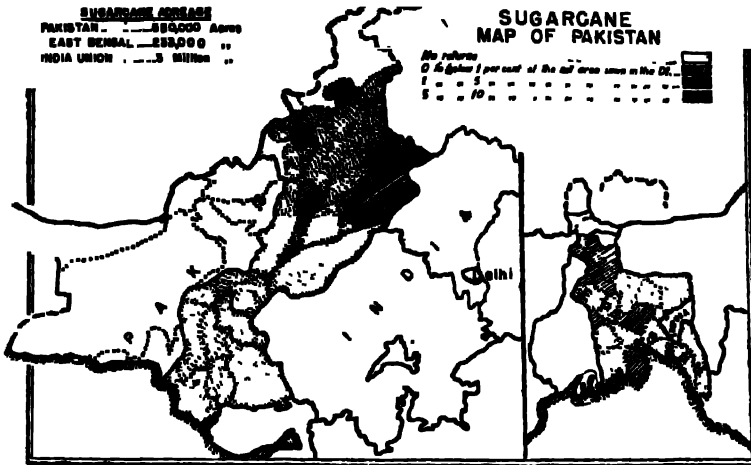


FIG. No. 130 Note the great concentration of sugar cultivation in N. W. F. P., canal colonies in the West Punjab and Mymensingh in East Bengal.

Tobacco : Tobacco is an important cash crop of Pakistan. It is mostly grown in East Bengal. The chief districts are

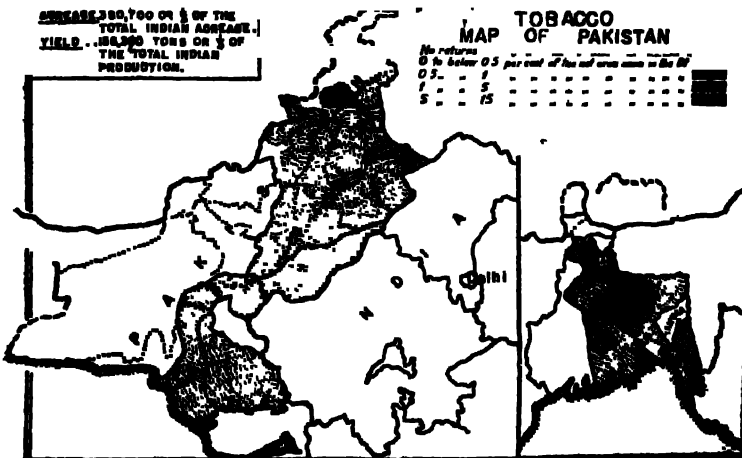


FIG. No. 131. Note Rangpur in Eastern Pakistan and Sialkot in the West Punjab are the two important tobacco producing districts

Rangpur, Dinajput and Chittagong. About 15 per cent. of the sown area in Rangpur is occupied by tobacco.

AREA AND PRODUCTION (AVERAGE 1936-1939)

			Thousand acres	Thousand tons
East Bengal	..	..	279	118
West Punjab	..	..	48	18
N. W. F. P.	..	..	18	11
Sind	..	..	5	2
States	..	..	1	1
Total			351	150

The area under tobacco in 1947-48 was 326,000 acres and the production 140,000 tons.

Tea : It is also an important product in Pakistan. Its cultivation is confined to Sylhet and Chittagong hill tracts. The annual production of tea is about 45 million lbs. compared to 405 million lbs. in the Indian Dominion. At present there are 116 factories in Eastern Pakistan of which 109 are in Sylhet and 3 in Chittagong. About 74,112 acres of land are under tea cultivation in Pakistan. Tea is chiefly exported to U. K. Pakistan has joined the international tea agreement early in 1949 for a period of two years. Pakistan's standard acreage under the agreement is fixed at 76,700 acres, and the export quota at nearly 35 million lbs.

Tea is mainly exported through Chittagong. As the export seasons of jute and tea are the same, there is always a great rush for loading at Chittagong ; consequently Chittagong with its normal capacity of only 600,000 tons per annum cannot cope with the traffic. Another problem of the tea industry is the shortage of tea chests.

Cotton : The most important industrial crop of Western Pakistan, although it is produced in every part of the Dominion.

Thus Western Pakistan raises about 97 per cent. of the Dominion's cotton. Multan, Montgomery, Lyallpur, Shahpur, Lahore, Sheikhpora and Jhang districts account for 90 per cent.

of the cotton production of West Punjab. In each of these districts cotton occupies 20 to 30 per cent. of the sown area.

• COTTON : AREA AND PRODUCTION (1945-46)

			Thousand acres	Thousand bales of 400 lb. each
West Punjab	..	..	1958	810
Sind	..	..	826	382
States	..	..	435	194
N. W. F. P.	..	..	9	2
East Bengal	..	..	91	23
Total			3319	1411

Sind has cotton tracts in the districts of Tharparkar, Hyderabad and Nawabshah which contribute about 95 per cent. of total provincial production.

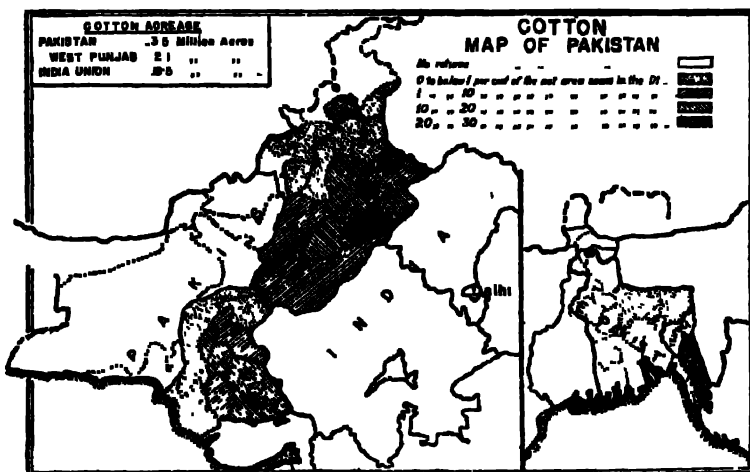


FIG. No. 132 Note the greater concentration in the eastern parts of West Punjab and Hyderabad District in Sind

Of late years American cotton has been raised in the West Punjab and Sind, which are watered by a perennial canal system and where the climate is plentiful of moisture. Such plant needs about 7 months of growing season during which time there must be no risk of frost. At present the American

varieties account for 80 per cent. of the total production. About 4 million acres of land are under cotton cultivation in Pakistan and the yield is 1.3 million bales (of 400 lbs. each). American cotton occupies about 75 per cent of the total acreage. Pakistan is in a position to export about 80 per cent. of her cotton mainly to Indian Dominion.

Jute : Pakistan holds a dominant position as a producer of raw jute. About 80 per cent. of the total world production of jute comes from the Eastern Bengal. The main jute belt in Pakistan consists of Dacca, Faridpur, Pabna, Rangpur and Rajshahi. Mymensingh alone raises more than 70 per cent. raw jute of Eastern Pakistan. In these areas, retting is most advantageous because of the innumerable rivers, tanks and pools. About

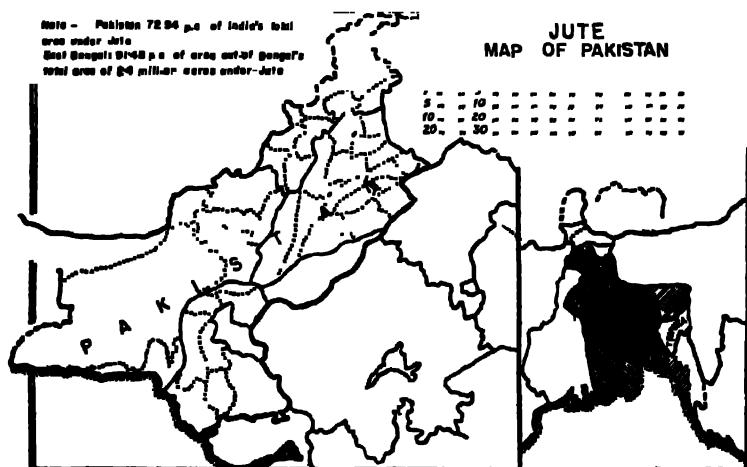


FIG. No. 133 Jute—A product of East Bengal Mymensingh and Dacca are the chief jute producing districts.

2 million acres of land are under jute cultivation in East Bengal. The annual yield of raw jute is about 69 million bales (of 400 lbs. each). Jute cultivation is a very profitable occupation to the peasants in Eastern Pakistan who depend very much on it for their prosperity. There is not a single Jute mill in Pakistan. The present arrangements for the baling of raw jute are also unsatisfactory. Consequently, the great part of the jute crop is sent to Indian Union to be processed from where again the produce is exported outside.

The total export of raw jute from East Bengal in 1947-48 amounted to 23 million maunds or 4.6 million bales. Of this 4.1 million bales were exported to Calcutta by steamers and country boats. The share of Chittagong in the total jute export was only for 51,400 bales. The Government is taking steps to develop Chittagong so that the port may handle a larger volume of export trade. There are at present neither marketing nor warehousing facilities available in Chittagong.

Oil Seeds : About 1.8 million acres of land are under oil seeds cultivation in Pakistan as compared to 20 million acres in Indian Dominion. The important oil seeds are rape seed and linseed. East Bengal is better placed in respect of oil-seeds, though the quality is inferior.

AREA AND PRODUCTION OF OILSEEDS (1945-46)

(Sesamum, groundnuts, rape and mustard, linseed and castor seed)

		Thousand acres	Thousand tons
East Bengal	.. ..	634	112
West Punjab	.. ..	446	77
Sind	.. ..	263	45
N. W. F. P.	.. ..	91	6
States	.. ..	47	10
Total		1481	250

Forests

Forests cover about 5 million acres of land in Pakistan, which in terms of percentage is only 1/20 of the total area.

Sind, North West Frontier Province are hardly forested, as these are mostly arid areas. The position of the West Punjab is no better, about 2 per cent. of area being covered by forests. The Eastern Pakistan has, however, considerable areas under forests along the southern coast as well as in Chittagong.

AREA UNDER FORESTS IN PROVINCES (1945-46)

(In thousand acres)

East Bengal	.. ..	3117	N. W. F. P.	.. ..	353
Sind	.. ..	716			
West Punjab	.. ..	1149	Total	.. ..	5335

The principal trees which yield timber are the following :

- (i) Babul in Sind, Beluchistan and the West Punjab.
- (ii) Blue pine in North West Frontier Province and the West Punjab.
- (iii) Gurjan in East Bengal, used for boat building and packing cases.
- (iv) Gamari in East Bengal used for boats, buoys and packing cases.
- (v) Sundri in East Bengal.

Mineral Products

The present position of Pakistan in respect of mineral wealth is not very satisfactory, although she is endowed with diversified mineral wealth. Her great unexplored areas however afford promising fields. Till proper surveys are undertaken and new fields discovered, Pakistan will have to depend on foreign sources for basic minerals of industrial value. The Dominion does not now produce iron ore, manganese, monazite, copper, mica and bauxite. Several areas are now under examination, and it may be possible to get *iron deposits* in the North West Frontier Province, *manganese* in Chitral, Kohat and Beluchistan, *copper* in Beluchistan, Chitral and Waziristan, *mica* in Hazara district, West Punjab and Beluchistan and *bauxite* in Beluchistan. Substantial *deposits of coal of good quality* are reported to be lying below 250 feet in Beluchistan and West Punjab. Experiments in Laboratories show that coal though not fit for use in boilers and allied purposes, is rich in many other valuable properties. The production of sulphur, coal, coal gas and distillation products extracted from this coal hold out promise for immense industrial development. In addition to this, coal bricks and coke bricks can also be produced from West Punjab coal which can be respectively used in boilers and for domestic purposes.

The mineral situation in Pakistan will demand serious consideration of the authorities. The country is in a somewhat anomalous position in that most minerals of industrial importance are located in Beluchistan, Chitral and western fringe of the N. W. F. P., but no minerals are mined in areas where the greater number of manufacturing industries are located and

denser populations exist. The industrial and commercial exploitation of most of the minerals of Pakistan will depend on the development of cheap and rapid transport.

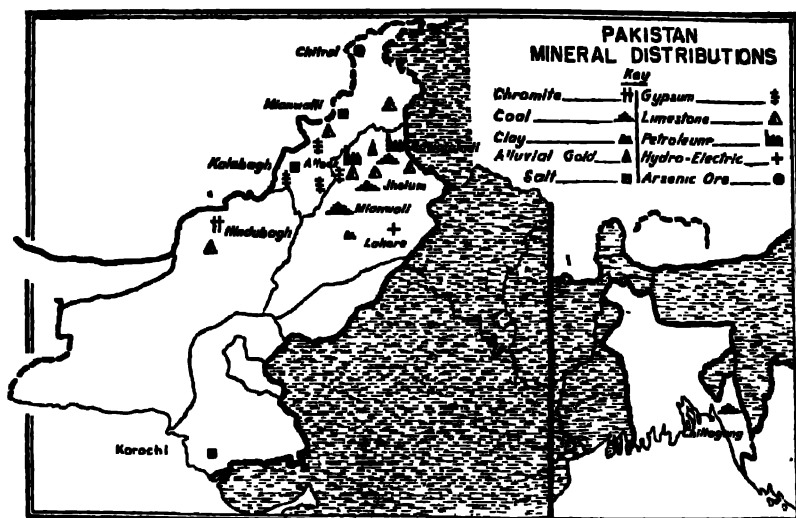


FIG. NO. 134 Note the absence of minerals in Eastern Pakistan. Coal and petroleum deposits may however occur in future.

The important minerals of the Dominion are Chromite, Petroleum, Salt, Saltpetre, Gypsum, Limestone, Clay, Fuller's Earth and Antimony.

Minerals	Annual Production	Areas of Production
Chromite ..	19,000 tons.	Upper Pishin valley and Hundubagh in Beluchistan; N. W. F. P.; Chitral.
Coal	4,00,000 tons, (insufficient for industrial purposes). Coal is of tertiary type and as such cannot be used for coking and metallurgical purposes. The total reserves of coal are estimated at 6.5 million tons.	Shahpur, Jhelum and Mianwali in the West Punjab; Khost in Beluchistan. Little coal is also available in Chittagong in Eastern Pakistan.

Minerals	Annual Production	Areas of Production
Gypsum ..	50,000 tons (total undivided India 84,000).	Jhelum, Shahpur and Mianwali in the West Punjab; Beluchistan; Sind; N.W.F.P.
Fuller's Earth ..	3,000 tons (total undivided India 11,000 tons).	The West Punjab, N.W.F.P.
Petroleum ..	20 million gallons. The oil production of the Attock oil fields is on the decline. In 1941, the production was about 36 million gallons, while in 1946 it was only 12 million gallons. There are however many prospective areas for oil production in Western Pakistan. The Kohat Salt Region, North Waziristan, Dera Ismail Khan and Bannu district may in future yield considerable petroleum	The West Punjab; N.W.F.P. Beluchistan. The important field is Khaur in the West Punjab with refinery at Rawalpindi. Oil indications are also found in Sylhet and Chittagong.
Salt	0.1 million tons (total undivided India 19 million).	Sind, the West Punjab and N.W.F.P. The important field for rock salt is in Kohat. Common salt is manufactured at Mauripur (Sind).
Limestone ..	8,00,000 tons (undivided India 52 lakhs).	Attock, Jhelum and Rawalpindi in the West Punjab; N.W.F.P.
Clay	Large quantity.	West Punjab. Fire clay in Dera Ismail Khan district. Ochre and other coloured clays in Sind and Chitral.
Saltpetre ..	Considerable quantity	West Punjab.
Antimony ..	Large reserve—but not developed yet.	Chitral State and Kalat State. The inaccessibility of the neighbourhood, its elevation of 13,500 feet and its climate, which is rigorous enough to limit work to two or three months in the year, have hindered any active exploitation up to the present time at Chitral State.
Alluvial Gold ..	Small quantity.	Jhelum district in the West Punjab.
Arsenic ore ..	Reserves unknown.	Chitral in N.W.F.P.
Granite ..	2,00,000 tons (total undivided India 16 lakhs)	The West Punjab and N.W.F.P.

There is considerable scope for the development of hydro-electric power in Pakistan. Already four hydro-electric projects have been planned. These are (a) the Karnafuli Project in East Bengal, (b) the Rasul hydro-electric scheme in West Punjab, (c) the expansion of the Malakand Station in the N. W. F. P. and (d) the Dargai Station near Malakand.

The Rasul Hydro-electric scheme is by far the most important project in West Punjab. The construction has already started. The project will utilize the head available from the Upper Jhelum canal into the Lower Jhelum canal.

The project will develop 14,000 K.W. of firm electric power and about 20,000 K.W. of secondary power for several towns in West Punjab as well as for lift irrigation

The Karnafuli Project of East Bengal contemplates harnessing the waters of the river Karnafuli for the development of power. The industrialisation in Eastern Pakistan is handicapped by lack of power. The Project will develop 60,000 K.W. of energy. Chittagong, Chandpur and Comilla will be served from this source of power. In addition, the project will provide navigation facilities up to the mouth of the Karnafuh, irrigation facilities to an area of 70,000 acres and control of floods.

Fruit-production.

Both from the standpoint of variety and volume, Pakistan is indeed very rich in fruits. Almost all the provinces in the State grow fruits on commercial scale. The annual production is about 3 million tons. Between 60 to 70 per cent. is consumed in the State and the rest is exported.

East Bengal is noted for mangoes, pine-apples and bananas. Mangoes are raised in abundance in Rajshahi, Bogra, Dinajpur, Malda and Rangpur. Bananas come from Dacca, Faridpur, Noakhali and Bakargunj. Sylhet produces pine-apples.

The West Punjab has much developed the fruit industry in Rawalpindi, Jhelum and Attock districts. The Muree Hills may be considered as the fruit garden of the province. Oranges, mangoes, lemons and sweet limes are the principal fruits. There is a plan to grow on commercial lines apples, walnuts, almonds and olives in the Muree Hills.

North-West Frontier Province grows pears, peaches, figs, plums, bananas and mangoes. Figs, peaches and pears have great demand both in the country and the Indian Union. *Beluchistan* depends for its economy on fruit trade. Grapes, apples, apricots and musk melons are grown extensively for markets in Pakistan and Indian Union. As a matter of fact, Indian Union is the best market for fruits coming from Beluchistan and N. W. F. P.

Sind has a large production of grapes and dates. Dates are also grown in Bahawalpur.

In spite of large production of fruits in Pakistan, the *fruit canning industry* is yet to be developed on modern lines. Pakistan promises to be a very important source of fruits in near future for the world markets.

Live Stock Population

The relief and climate of Pakistan are generally suitable for live stock population.

		<i>In millions</i>			<i>In millions</i>
Cattle	..	.. 20 3	Goats	..	.. 8'0
Buffaloes	..	.. 5 4	Horses & Mules	..	.. 2'0
Sheep	..	.. 5'0	Camels	..	.. '4

In Eastern Pakistan, heavy rainfall does not encourage rearing of sheep and buffaloes. Nor can camels stand the climate. Cattle and goats, however, are mostly found in this area. In Western Pakistan, camels are mostly found in Sind and Beluchistan. North West Frontier Province, Beluchistan and Sind support a large number of sheep. Buffaloes are mostly found in the West Punjab.

The principal products are milk, hides, skin and wool. *Dairy industry* has developed in the southern side of West Punjab—particularly in the districts of Montgomery, Lyallpur and Multan. *Leather industry* is of growing importance. The annual average production is as follows: cow hides (4'5 million pieces), buffalo hides ('8 million pieces), goatskin (5'3 million pieces) and sheepskin (2'0 million pieces). Although raw materials are plentiful, tanning industry has not yet developed in Pakistan. *The annual production of raw wool in Pakistan is about 22 million lbs.* The best wool comes from Sind and

Beluchistan. In 1948, Pakistan exported about 130,000 bales of raw wool to Europe and America. The chief buyers of raw wool are U. K. and U. S. A.

Fisheries

The Pakistan fishing industry while nationally not as important as agriculture and live stock industries from the standpoint of value of products and numbers of men employed, is nevertheless, of vital importance to the economy of the Dacca and Faridpur districts in East Bengal as well as of the Sind coast.

Fresh fisheries in Eastern Bengal perform an important function by adding to the food supply. In East Bengal, any diminution of activity in the fishing industry results profoundly in worsening the food position. The annual output is far beyond the consuming capacity of the province and therefore can be exported to Indian Union. Boats are extensively used for carrying fish to rail or steamer heads at Narayanganj, Chandpur and Goalando. The important catches are rohu, hilsa, catla and prawns.

In Western Pakistan, the industry is concentrated along the coast of Sind.

The entire sea coast along Sind is important for fishing industry. About 39,000 people of India are engaged in it.

TOTAL CATCH PER YEAR IN SIND

	(In 000 maunds)		
Sea fish 198
Fresh fish 266·5

464·5

The catches are prawns, salmon, mullets, pomfret, mackerel and hilsa. Sind is a great exporter of fish. A little quantity of fresh fish is also caught in N. W. F. P.

Manufactures

"The most striking feature of Pakistan's present economy is the marked contrast between its vast natural resources and its extreme industrial backwardness." This backward position

has been the result of certain forces : first, in the early years of the last century, the organised industries were located in Calcutta, Bombay and Ahmedabad ; secondly, during the World War I, the movement in the development of manufactures started in the central regions like Indore, Kanpur, Nagpur, Tatanagar and Jubbulpur ; and thirdly, technical institutions, research laboratories, credit and service agencies have developed mostly in Calcutta, Delhi, Madras, Bombay, Kanpur, etc. Thus the regions now constituting Pakistan are not industrialised judged by the number of establishments and persons employed therein.

LARGE INDUSTRIAL ESTABLISHMENTS IN 1946-47

	East Bengal	N W.F P	West Punjab	Sind	Total
Cotton mills	9	—	4	1	14
Sugar Factories ..	6	1	4	—	11
Cement ...	1	—	1	2	4
Soap ...	1	—	1	2	4
Glass	2	—	3	—	5
Chemicals	—	—	2	1	3
Matches ...	4	—	2	—	6
Woollens ...	1	—	1	—	2
Silk ..	—	—	—	2	2
	24	1	18	8	51

About 200,000 persons are employed in main industries of Pakistan.

The future of Pakistan however in matter of industrial development is hopeful. A number of minerals like coal, iron and oil may be discovered on a proper geological survey although it will take time. The present shortage of capital goods and capital for the expansion of various industries for which raw materials are available, will not remain a problem for ever. She can depend upon external sources for capital to finance equipment for her development. Unless accurate and exhaustive statistics about Pakistan are made available, foreign capital will be slow to enter Pakistan.

Cotton mills : At present Pakistan has 14 cotton mills with 4877 looms and 184,616 spindles. The industry gives employment to about 19,000 persons. The annual production of mill cloth is about 190 million yards against 235 million yards

produced by hand looms. East Bengal leads in the cotton textile industry with 9 cotton mills having 95,208 spindles and 2,522 looms. *Four more mills are in course of erection.

The Dominion is not self-sufficient in cloth, the shortage being for about 500,000 tons (500 million yds).

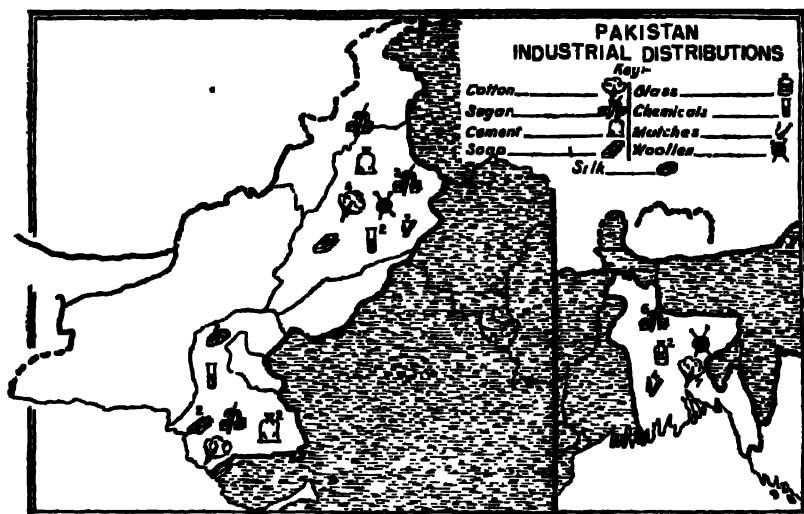


FIG. No. 135. The number against each industry refers to 1947-48.

The future of cotton industry is full of promise, as Pakistan is a great producer of raw cotton and consumer of cloth. The Government may undertake the construction of textile factories if private capital is not forthcoming.

Sugar Industry :

Eleven sugar factories in Pakistan are distributed as follows :—

Regions	No.	Centres
East Bengal	6	Dacca, Rajshahi, Mymensingh, Dinajpur, Jessore.
West Punjab	4	Rawalpindi.
N. W. F. P.	1	Abbotabad.

The annual production of sugar is between 25,000 to 30,000 tons, against the annual consumption of 200,000 tons. East Bengal can increase her production of sugar-cane in Mymensingh, Chittagong, Dinajpur and Rangpur where the soil and climate are favourable for this crop. A sugar factory, the biggest of its kind in Asia, is being constructed at *Murdan* in N.W.F.P. It will have a capacity to produce 50,000 tons finished sugar per year. This would be a great step towards making Pakistan self-sufficient in sugar.

The Woollen Industry : Tweeds, rugs, carpets and blankets are being manufactured in Sind and Western Punjab. A factory has been established recently at Karachi for the manufacture of yarn and worsted yarn. Pakistan's blanket industry consumes about half the raw wool production of the country.

There are six *match factories* located at Lahore and Dacca. The *cement industry* is well organised. The centres are Wah (in the Attock district), Karachi and Sylhet. The annual production of cement is about 600,000 tons of which 50 per cent. is required for domestic consumption. The *glass industry* is of recent growth. There are five factories—two in East Bengal and three in the West Punjab. Dacca is the chief centre of glass manufacture in East Bengal.

Pakistan Government is taking steps to develop various manufacturing industries. Three *jute mills* of 100 looms each are likely to be started soon in East Bengal. Although Pakistan has no *paper mills* at present, the supplies of chemicals and other raw materials are considerable for the development of paper industry. Rosin, salt and lime of West Punjab and the large quantities of bamboos in East Bengal can help the location of paper industry. Straw-board and chief wrapping paper can be manufactured in Karachi.

Communications

Pakistan has expanding means of transportation by land, air and water. Since the country is an agricultural one and has large surplus of products for export, the transport systems will always play a vital part in Pakistan's economy.

Railways : In Pakistan there are 6,748 miles of railway lines. Before the partition the Pakistan railway system was part

of the B. A. Rly. and the N. W. Rly. The N. W. Rly., has its headquarters at Lahore. It has about 5,000 miles of line. There are two main lines with several branches.

- (a) Lahore to Peshawar *via* Wazirabad, Rawalpindi and Attock. From Wazirabad a line goes to Sialkot on the border of Kashmir.
- (b) Lahore to Karachi *via* Khanewal, Lodhran, Rohri and Sukkur. The line crosses the Indus at Rohri. From Sukkur a branch line goes to Zahidan *via* Sibi and to Chaman *via* Quetta.

There are also other branch lines which connect Wazirabad with Khanewal; Peshawar with Muzaffargarh; Rohri with Badin.

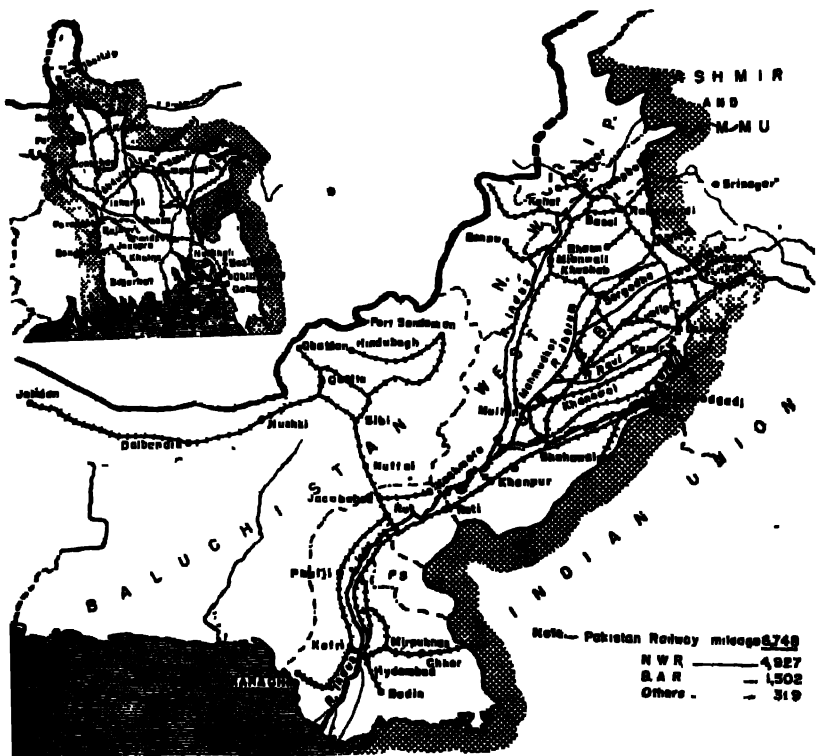


FIG. No. 136. The railway lines in Western Pakistan are confined mostly to the river-system of the Indus. There is only one railway line in Beluchistan along its northern side connecting Quetta with Zahidan.

In Eastern Pakistan, the main railway lines of the E. B. Ry. run from Chittagong in metre gauge : (a) Sylhet via Lakhsm, Comilla, Narayanpur and Kulaura. From Lakhsm, there is a branch line to Chandpur ; (b) to Bahadurabad *via* Narayangunj and Mymensingh. Mymensingh is connected by a line with Dacca. The broad gauge lines are confined to the Western side of East Bengal. Poradah is an important railway junction of the broad gauge lines. From here lines go to (a) Serajgunj on the Jumna in Pabna, (b) Rajbari on the Padma and thence to Faridpur : (c) Domar *via* Iswardi and thence to Darjeeling. The railway mileage in Eastern Pakistan is 1502.

Road transport in the modern sense of the term is highly developed in the West Punjab and N. W. F. P., where there are about 7000 miles of metalled roads consisting of main and trunks. In East Bengal, however, heavy rainfall and existence of numerous rivers make road construction difficult and expensive. There are no trunk roads in East Bengal. The total mileage of roads in Pakistan is about 50,000.

Frontier roads.

There are five main land routes which connect Pakistan with Iran, Afghanistan and Sinkiang.

(a) From Chaman (in Beluchistan) along the Khojak Pass to Kandahar and Herat.

(b) From Quetta to Zahidan on the Iran-Beluchistan border by a branch line of the N. W. Railway ; thence by caravan route to Iran. Of late, regular motorable roads have been opened connecting Zahidan with Teheran *via* Bam, Kerman, Yazd, Ardistan and Kasan.

(c) From Peshawar along the Khyber Pass (3,370 ft.) to Jalalabad. The Khyber Pass is only 30 miles long.*

* Alternative to Khyber Pass Trade Route.

The possibility of the development of an alternative trade route to the existing highly expensive motor lorry road over the Khyber Pass is envisaged in the construction of Pakistan's Warsak hydro-electric station.

The dam will result in penning up the water of the Kabul River and make this stretch of the river navigable. This part of the river could also be used as a water reservoir for fisheries and industry being developed in the N. W. F. P.

The Warsak dam, when completed, will raise the water-level of the Kabul River by about 150 ft. This will provide water for irrigation of nearly 60,000 acres on the right bank of the river belonging

(d) From Attock, in the West Punjab, to Kashgar (Sinkiang) *via* Chitral and Hindukush.

(e) From Dera Ismail Khan along the Gomal Pass (7,500 ft.) to Kalat and Kandahar.

Waterways. The rivers of Western Pakistan are little used for transport. Though the Indus is one of the greatest waterways of the world, it has ceased to carry traffic since the railway traversed its valley.

The Indus rises on the north side of the Kailash range, near the source of the Sutlej. The Indus flows first north-west through Ladak between the Kailash and the main Himalayan range up to Gilgit, from where it takes a sharp bend towards the south and maintains this direction for the rest of its course. Near its mouth the Indus divides into distributaries "which form intricate channels across its reed-covered delta, fringed with mangrove swamps". In its upper and middle course, the Indus receives the waters of the *Shayok*, *Kabul*, *Kuram* and *Gomal*. But the most important tributaries are the *Jhelum*, *Ravi*, *Chenub* and *Sutlej*—all flowing from the western Himalayas and joining the Indus at Mithunkot.

The Indus is 1,800 miles long and is navigable for 1,000 miles from its mouth. The shifting character of its banks and sudden floods during the rainy season are responsible for the absence of important towns on its course. It is interesting to note that Multan, Lahore, Lyallpur, Wazirabad and Bhawalpur are situated not on the main stream but on its tributaries.

In Eastern Pakistan, the river navigation occupies a very important place. There is no other region in the world which has so many navigable rivers, distributaries, channels and creeks as in East Bengal.

to Mullagoria and Afridi tribesmen and 5,000 acres on the left bank belonging to Mohmand tribes.

The Warsak project will help 1,000 tribesmen settle on new land, brought under irrigation and supply them with power for local industries. The Kabul River canal will also enable large areas of afforestation to be carried out on the lower slopes of the Peshawar hills. These forests will ease the problem of fuel shortage in Peshawar, while employment in forests will absorb a further number of tribesmen.

All these are subsidiary advantages of the Warsak project. The most important is the power scheme which will generate 100,000 kw. This will be supplied to most parts of the West Punjab and will give an impetus to industrialization of that province to the benefit of the whole of Pakistan.

The chief rivers of East Bengal are the Padma, the Brahmaputra and the Meghna. *The Padma* is really the continuation of the Ganges. It flows towards the south-east from the Murshidabad-Maldah districts through Rajshahi, Pabna, Faridpur and Dacca. *The Brahmaputra* from Assam enters East Bengal in Rangpur and flows towards the south and joins the Padma near Faridpur. *The Meghna*, known as the Surma in Sylhet, meets the Padma near Chandpur.

Regular steamer services are maintained between (a) Chandpur and Narayangunj ; (b) Goalanda and Chandpur ; (c) Goalanda and Narayangunj ; (d) Dacca and Barisal ; (e) Barisal and Lohajang. These services are essential not only for passengers but also for the movement of jute and rice of Pakistan.

Aviation. It maintains swift communication between the two parts of the country awkwardly divided by the great land mass of the Indian Union.

Pakistan is to-day supplied with airports and aerodromes in many parts of the country and is in a position to meet the expansion of aviation that has resulted from post-war developments. The important aerodromes are at Karachi, Lahore, Quetta, Peshawar, Hyderabad (Sind), Multan, Dacca, Chittagong and Sylhet. Two companies—Orient Airways and Pak Air Services—maintain services in Pakistan. They also operate services to Bombay, Calcutta and Delhi in Indian Union as well as to Ceylon, Burma, Singapore, Tehran and Cairo.

THE PRINCIPAL AIR ROUTES (1948-49)

1. *Orient Airways*

Karachi—Quetta—Lahore	..	..	..	2 weekly
Karachi—Lahore—Rawalpindi—Peshwar	..	..	..	3 „
Karachi—Calcutta—Dacca—Chittagong	..	..	..	3 „
Karachi—Ahmedabad—Bombay	..	..	..	3 „
Karachi—Quetta—Zahidan—Meshed—Teheran	..	..	..	1 „
Calcutta—Dacca	..	..	..	daily
Dacca—Chittagong—Sylhet	..	..	..	„
Calcutta—Chittagong	..	..	..	„
Chittagong—Akyab—Rangoon	..	..	..	„

2. Pak Air Services

Karachi—Lahore	..	..	..	..	..	daily
Karachi—Delhi	..	..	..	..	..	„
Lahore—Delhi	..	..	..	..	..	„
Lahore—Rawalpindi—Peshawar	..	..	..	..	..	3 weekly
Karachi—Bombay—Colombo	..	..	..	..	..	3 „
Karachi—Calcutta—Rangoon—Singapore	..	..	..	..	..	3 „
Karachi—Cairo	..	..	..	..	..	2 „

Karachi is the principal airport. Its position on the international trunk routes has made it very important.

KARACHI AIR PORT TRAFFIC

(Monthly average based on January to May 1948)

Aircrafts arrival and departure	..	..	..	979
Passengers embarking and disembarking	..	..	..	8228
Passengers in transit	..	..	..	3524
Mails on-loaded and off-loaded	..	..	..	107,722 lbs.
Mails in transit	..	..	..	221,797 lbs.
Freight on-loaded and off-loaded	..	..	..	339,523 lbs.
Freight in transit	..	..	..	158,314 lbs.

The Pakistan air-line service with Indian Union is being operated under agreement with the India Government.

Pakistan's air-lines, however, are not yet profitable commercially. Load factors and the utilization of planes are below economic levels. In Eastern Pakistan, lack of technical personnel and radio equipment have prevented services to Faridpur, Comilla and other places having war-time aerodromes.

Ports and Trade Centres

Pakistan has access to the Arabian Sea and the Bay of Bengal. The two important ports are Karachi and Chittagong.

Karachi. Karachi is the most important port of Pakistan. It is provided with a splendid natural harbour. Its hinterland is very extensive, covering as it does Persia, Afghanistan, Beluchistan and the West Punjab. The importance of the port increased after the opening of the Suez Canal. The principal exports are wheat, oil seeds, cotton, wool, hides and bones.

The imports are cotton manufactures, sugar, metals, machinery, oil, woollen manufactures, liquor, chemicals, etc. Karachi is more noted for commerce than for industries. With the exception of wheat, other industries are little developed. Karachi is connected with hinterland by the North Western Railway. There is a scheme to develop ship-building and ship-repairing industry in Karachi.

Chittagong is an important outlet for the produce of East Bengal. It is situated at a distance of 11 miles from the mouth of the Karnafuli river. The chief article of export is tea. The other exports are jute, kerosene, rice and raw cotton. The imports are chemicals, machinery, metal, salt, cotton goods and sundry instruments. The port facilities are limited and already strained to the utmost. There is now a serious warehousing problem.

Recently a Committee has been set up by the Government to consider schemes for the development of the port in respect of harbour equipment and accommodation.

The other minor ports are *Cox's Bazar* and *Noakhali* in Eastern Pakistan.

The West Punjab has an area of 61,775 square miles with about 13 million population. The density per square mile is 263 persons. Agriculture is the main occupation of the population. The province is rich in rock salt, petroleum and coal of tertiary origin.

There is a large number of towns with population more than 100,000 in each. The important towns of the West Punjab are Lahore, Rawalpindi, Sialkot, Lyallpur and Multan.

Lahore, the capital of the West Punjab, is the largest city and the chief trading centre of the province. It stands on the river Ravi and is 33 miles distant from Amritsar. Cotton weaving, tanneries, glassworks, flour mills, sugar mills, etc. are the chief industries. Leather trade is also important. According to 1941 census the population is about 700,000.

Lyallpur, 87 miles south-west of Lahore, is the biggest wheat exporting centre of West Pakistan.

Multan is a frontier town. It is an important collecting centre. It brings fruits, drugs, silk and spices from Afghanistan and passes them on to the East. It is connected by railways with Lahore and Karachi.

Sind has an area of 48,136 square miles with 4.5 million population. About 62 per cent. of the population are engaged in agriculture. Industry occupies about 8 per cent. of the population, while in fishing about 39,000 people are engaged. The principal exports are raw hides and skin and wheat. The trade centres are *Karachi, Sukkur, Hyderabad, Badin, and Jacobabad.*

The *North West Frontier Province* is mountainous and covers an area of 39,270 square miles of which the Tribal territory accounts for 24,986 square miles. It has a population of 3 millions. The chief trade centres are Peshawar, Abbottabad, Dera Ismail Khan and Thal. *Abbottabad*, with a population of 40,000, is a hill station on the border of Kashmir. Leather and stone works are carried on in the city on an extensive scale. Recently certain weaving and spinning mills have been established. *Peshawar*, the capital of the Province, is an important military and trading centre.

Beluchistan is the largest unit in Pakistan, and covers 134,002 square miles. The population is only 857,835 which gives a density of 9 persons per square mile. The plains are barren and stony. The climate is subject to extreme heat and cold, and the rainfall is scanty and uncertain. The region is noted for fruits like grapes, apricots, peaches, apples, pears and melons which are cultivated with the help of irrigation. The principal trade centres are *Quetta, Chaman, Zahidan and Hindubag.* The capital is *Quetta.*

In *East Bengal* the important towns are 'Dacca, Narayanganj, Mymensingh, Faridpur, Rangpur, Sylhet and Chandpur. The major industries of East Bengal are tea with largest number of establishments, jute presses with largest number of workers employed, followed by cotton spinning and weaving mills. Rice mills like tea factories are numerous but engage less number of employees than those in railway and engineering workshops and sugar factories.

In East Bengal there are 116 tea industries, 84 rice mills, 65 jute presses, 21 general engineering establishments, 14 hosiery and knitting mills, 13 railway workshops, 13 cotton mills, 9 sugar factories, 6 boat-building and repair shops and 6 printing and book-binding establishments.

Dacca is famous for shell bangles and for the works on gold and silver. It is the most important inland trade centre. It is situated in the heart of the jute-growing districts. *Narayanganj* is practically the port of *Dacca*. It is an important centre of trade in Eastern Bengal. It has a population of about 45,000. *Sylhet* on the Surma river is important for fruits and lime.

Foreign Trade

Pakistan is not self-sufficient in many commodities required by modern industry. Coal, machinery, textiles, automobiles, chemicals, paper, iron and steel goods, sugar and rubber products are all used in quantity by Pakistan industry or needed to fill the wants of the Pakistan consumer. The maintenance of a large volume of trade is therefore of great importance. It is only by importing on a large scale that she can meet her needs for the many goods that cannot be produced in Pakistan.

The principal items of exports are raw cotton, raw jute, raw wool, woollen manufactures, gypsum, potassium nitrate, raw hides and skin. A little foodgrains, tea, fruits and vegetables are also exported. Raw jute constitutes the most important item of export as the entire production is exported. The next item is raw cotton. About two-thirds of the cotton production are exported outside including India. Indian Union, United Kingdom, Belgium, U. S. A., Russia, Italy, France, China and Australia are the chief destinations of Pakistan exports.

PRINCIPAL COUNTRIES IN EXPORT TRADE

(Value Rs. 00,000; April to Dec. '48)

Indian Union	..	..	9,85	France	..	..	3,05
U. K.	..	..	8,85	Hongkong	..	..	2,43
Soviet Union	..	..	3,93	Italy	..	..	2,57
U. S. A.	..	..	5,51	Belgium	..	..	2,86
Spain	..	..	3,11				—
China	..	..	2,85			Total	55,12

Indian Union imports chiefly raw cotton, raw jute, raw wool and foodgrains from Pakistan.

The chief items of imports are textile yarn and manufactures, mineral oils, machinery, steel and manufactures thereof, motor cars, chemicals, food, paper, electrical goods, etc. Her imports from India include cotton cloth and yarn, jute manufactures, sugar, gur, iron and steel, paper and coal.

Cotton textiles account for 50 per cent. of Pakistan imports. The sources of imports are Indian Union, U. K., U. S. A., Italy, Iran, China, Ceylon and Straits Settlements.

PRINCIPAL COUNTRIES IN PAKISTAN'S IMPORT TRADE

(April 1 to December 31, 1948)

Country	Value (Rs. 00,000)	Country	Value (Rs. 00,000)
Indian Union ..	.. 36,24	China .. ..	.. 2,30
U. K. .. ..	.. 17,19	Ceylon .. ..	.. 1,72
U. S. A .. ..	.. 4,91	St. Settlements ..	.. 1,01
Italy .. ..	.. 2,23		
Iran .. ..	.. 1.63	Grand Total ..	7351

During 1948-49, she realised a favourable balance of trade of Rs. 28 5 crores.

The Indo-Pakistan Commodities Agreement of 1949 is likely to be conducive to happier trade relation between the two countries. India will send 250,000 cloth and yarn, 80,000 tons of steel, coal and sugar to Pakistan while Pakistan will send 450,000 bales of raw cotton and 4 millions bales of raw jute to India. Thus it is an improvement on the first agreement.* India has not accepted any limitation of her right to export any quantities of raw jute.

QUESTIONS

1. What are the economic products of Pakistan? Do they compete with the Indian Union products in the foreign markets?
2. State briefly the prospects of the Dominion of Pakistan becoming a self-supporting economic unit.
3. Suggest a division of Pakistan into natural regions. Give full reasons for your answer.

* Details of which have been discussed in page 547.

4. What are the chief mineral products of Pakistan and where are they obtained?
5. Describe the distribution of population in Pakistan and account as fully as you can for the facts you state.
6. Write a short account of the transport systems of Pakistan so as to emphasise their importance in the Dominion.
7. On a sketch map of Western Pakistan, show the regions where irrigation has much developed.
8. On an outline map of Eastern Pakistan,
 - (a) shade the principal jute growing areas;
 - (b) indicate the main waterways with at least three river ports.
9. Write short notes on the following —Lahore, Peshawar, Rawalpindi, Dacca and Narayangunj
10. Describe the principal exports and imports of Karachi and Dacca.
11. What manufacturing industries in your opinion can be developed in Eastern Pakistan? (Cal B Com 1949)
12. Examine the present position and the future prospects of the following industries in Pakistan: (a) Sugar industry; (b) Cotton mill industry.
13. Discuss the nature of trade between Indian Union and Pakistan.
14. To what extent is Pakistan dependent on Indian Union for the supply of consumption goods? Are there alternative sources available now for such goods? (W B C S, 1949)

BURMA

[Burma was separated from India in 1937. In her racial type and culture, as well as in her geographical position, Burma belongs to the Indo-Chinese Peninsula.]

Burma occupies the north-western and western part of the great southward projection of the Indo-Chinese Peninsula. On the east lie the Chinese provinces of Yunnan, French Indo-China and Siam. To the north is the rugged region where India, China and Tibet meet. Burma presents the form of a kite, some 870 miles from north to south and 575 miles from west to east, *with a long tail extending to another 600 miles southward*. The coast-line is about 1,200 miles long, and more broken than that of India.

The Indian population in Burma is about one million or roughly 6 per cent. of the total population. Burma has an area of 2,60,000 square miles with a population of more than 16 millions.

It is a country of mountains and valleys. Northern Burma is a land of steep, lofty mountains and narrow valleys, all covered by forests. The valleys of the Irrawaddy and the Sittang comprise level lands of rich alluvial soils which have extended to the extreme south along the coast of the tail of Burma. The river Irrawaddy traverses the whole length of Upper and Lower Burma and is navigable from Rangoon for nearly 900 miles to Bhamo. It is the most important outlet of the heart of Burma, and the chief cities of the country are situated on its bank. The Salwin, though longer than Irrawaddy, is navigable only for 80 miles from its mouth. It is much interrupted by rocks and rapids.

The greater part of Burma being within the tropics, the climate is hot and damp.

The situation of Burma is very important: (i) She is a vital link in the Imperial air route from India to Australia. (ii) She has a common land frontier with Thailand, French Indo-China and China. The *back doors* into China are Lashio, Taungyi and Maymyo; the Lashio route, commonly known as the *Burma Road*, is very important. (iii) She is also connected with the main sea routes of the world.



FIG. No. 137. Map of Burma. There is no railway communication between Burma and Indian Union or Eastern Pakistan.

The people of Burma are mostly Mongolian and are generally better off and better educated than the Indians. They are open and frank, and they easily adapt themselves to those with whom they come into contact. Men and women enjoy equal rights in society. If the Burmans are not hardworking and enterprising it is because life in Burma has not been particularly strenuous. The prevailing religion is Buddhism, which is professed by about 85 per cent. of the population.

Mineral wealth is considerable, but with the exception of tin and petroleum, it is little developed. The oil-fields of Burma are confined to the valley of the Chindwin and the Lower Irrawaddy. The main oil-field lies at Yenangyaung, and there is a pipe-line running to Rangoon. In 1937 the total production was more than 300 million gallons, or one-half per cent. of the world yield. Rich deposits of tin are found in Tenasserim. Bawdin contains one of the largest deposits of silver in the world. Coal is found in the Chindwin valley where jade and amber mines are also worked. The other minerals are lead, rubies and wolfram.

The forests of Burma, which cover nearly 60 per cent. of the total area of the province, yield valuable timber. *Teak* has always been the most valuable tree commercially, while bamboo is probably the most useful forest product from the point of view of the people. *Teak* is found on the Pegu Yomas and the eastern slopes of the Arakan Yomas and also on the Siamese border. The teak trees are dragged by trained elephants from the forest to a river to be floated down to the Delta ports. Evergreen forests occupy the regions where the rainfall is very heavy.

Burma is essentially an agricultural land. Nearly 71 per cent. of the population are engaged in agriculture and forestry. Agriculture occupies about 22 million acres of land. Burma produces more than 5 million tons of rice annually. The Upper and Lower Irrawaddy valleys, the narrow coastal region on the west and Upper Tenasserim utilise more than 80 per cent. of their cultivated land for rice. Burma has about 3½ million tons of exportable surplus of rice. India takes about half of Burma's rice export. Maize is cultivated in the central valley of the Irrawaddy. Sugar-cane is cultivated in more than 20,000 acres of land in the Upper Irrawaddy region. The Northern Shan

States raise tea. Although tobacco is cultivated throughout the country, the western regions are more important, particularly the Arakan hill tracts. Other crops are cotton and oil-seeds.

Waterways form the most important means of communication in Burma. The railways are all metre gauge and start from Rangoon. One railway line follows the valley of the Irrawaddy and goes as far as Prome; the other line runs parallel to Sittang, crosses the Irrawaddy at Mandalay, and reaches Myitkynia in the north-east. Roads are not properly developed in Burma. The cost of making metalled roads is high because of the scarcity of good stone and the high cost of labour. There are only

17,000 miles of roads, of which 12,500 are motorable. The principal road runs from Rangoon to Mandalay, and another from Rangoon to Prome. There are no regular land routes between India and Burma.* Now that the second world war is over, the question of linking the road and railway systems of Burma and India should receive attention.

The principal trade centres are Akyab, Bassein, Tavoy, Moulmein, Mandalay, Bhamo and Rangoon. *Bhamo*, in Upper Burma, does considerable frontier trade with China. It is 200



FIG. No. 138 Akyab and its hinterland.

* "In this connection the question may be asked why Burma has never had a road connection with India. Such a road could only have been built as a strategic road, as sea-freights would always be lower than the charges by land. The road project has often been discussed, and the possible routes have been surveyed, but the money for the construction has never been found. Before separation, India apparently did not think the scheme an urgent one; and since separation, Burma's finances were inadequate, and also the ministers who fear Indian immigration, would never agree to the construction of a land route which would increase the difficulty of checking or controlling the immigration." Sir H. Craw, the 29th April, 1942.

miles above Mandalay. *Akyab*, on the western coast of Burma, is an important rice exporting centre. Its great drawback is that it has no railway communication. It has a population of over 40,000. The principal imports are liquor, machinery, textiles and hardware. *Bassein*, on the south-west of the Irrawaddy Division, is situated at a distance of nearly 70 miles from the sea. It has direct railway communication with Rangoon. *Rangoon*, the chief port of Burma, is the capital of the country. It is situated on the *Rangoon river* and is about 25 miles from the sea. The principal imports are cotton manufactures, metals, provisions, silk, sugar, leather goods, machinery, paper, etc. The chief exports consist of rice, hides and skins, zinc, lead, timber, mineral oils, tobacco and rubber. It is connected by railways with the most important towns of the country. The value of foreign trade in 1937-38 was worth Rs. 70 crores, of which imports accounted for Rs. 20 crores. *Moulmein*, on the Gulf of Martaban, is a large port. It is connected by railways with Rangoon. The opening of railway line has increased its importance, and much of the former import traffic of Rangoon is to-day handled by Moulmein. The chief imports are steel, sugar, provisions, and gunny bags; while the exports consist of timber, rubber, tin ore and tobacco. *Tavoy* is situated in the centre of the tail of Burma and is an important port. Wolfram and tin are the principal exports. *Mergui*, on the south-west coast of Tenasserim, is the centre of rubber and pearl fishing industry. *Mandalay*, in Upper Burma, is situated on the Irrawaddy river, about 400 miles north of Rangoon. Rice and silk are the articles of trade in the city.

The separation of Burma affected adversely the economic interests of India to a great extent. The fiscal protection granted to the various industries of India does not extend to Burma; and, therefore, these Indian industries are to compete in Burma on equal terms with the products of foreign countries. Then again, many Indian immigrants in Burma, who are working in rubber plantations and other industries, are looked upon as foreigners.

The separation of Burma also made the position of India as a supplier of mineral oils, rubber, tin and wolfram, very unsatisfactory. In 1941 an Indo-Burma Trade Agreement was signed, whereby it was agreed that Indian goods in Burma would

enjoy a 15. per cent. tariff preference over non-Empire goods, and a 10 per cent. preference over Empire goods. "The two countries can benefit by fostering mutual trade. If the Burmese can be sure that their economic growth and interests will not be stifled or overlooked, and the Indians in Burma be assured that their status in Burma will be the same as that of Burmans, then Indo-Burma relations will be placed on a good footing and a better understanding between the two countries will be established."

Burma imports from India, rice, piece goods, twist and yarn), jute, betelnut, pulses, wheat, iron and steel, cigarettes, tea, boots, and shoes, fruits; and from abroad cotton goods, machinery, iron and steel, chemicals, etc.

Burma sends to India rice, pulses, gram, oil, candles, tin, wood and timber.

India is one of Burma's best customers, in normal years taking about 60 per cent. of the exports. Burma and India can each supply what the other needs.

CEYLON.

Ceylon is separated from Peninsular India by the *Palk Strait* and connected with it by a line of islands known as *Adam's Bridge*. Physically the island is a part of the Deccan. The area of Ceylon is 25,332 square miles. Its length is 270 miles and its greatest width is 140 miles. The *Mahavula Ganga* is the longest river (134 miles) and flows to the north-east. It is navigable by small boats. Conditions of soil, temperature and rainfall have made Ceylon an agricultural country. The climate is more or less tropical, and there is rain throughout the year. The western side receives rainfall in the May-October season, while the eastern part gets it during winter. Plateaus and mountains occupy the central portion, and the other parts are plain. Only one-fifth of the total area is cultivated, and the remaining areas are either waste lands or covered with forests. Tea, rubber, coconuts and cinnamon are raised and exported. Coffee, cocoa and tobacco are also cultivated. The economy of Ceylon is inextricably bound up with its plantation industries, in particular tea and rubber. Of the minerals, limestones, gems

and graphite are important. The railways run from Colombo to the north-west to Talaimannar, to the north of Jaffna and to the east of Trincomalee.

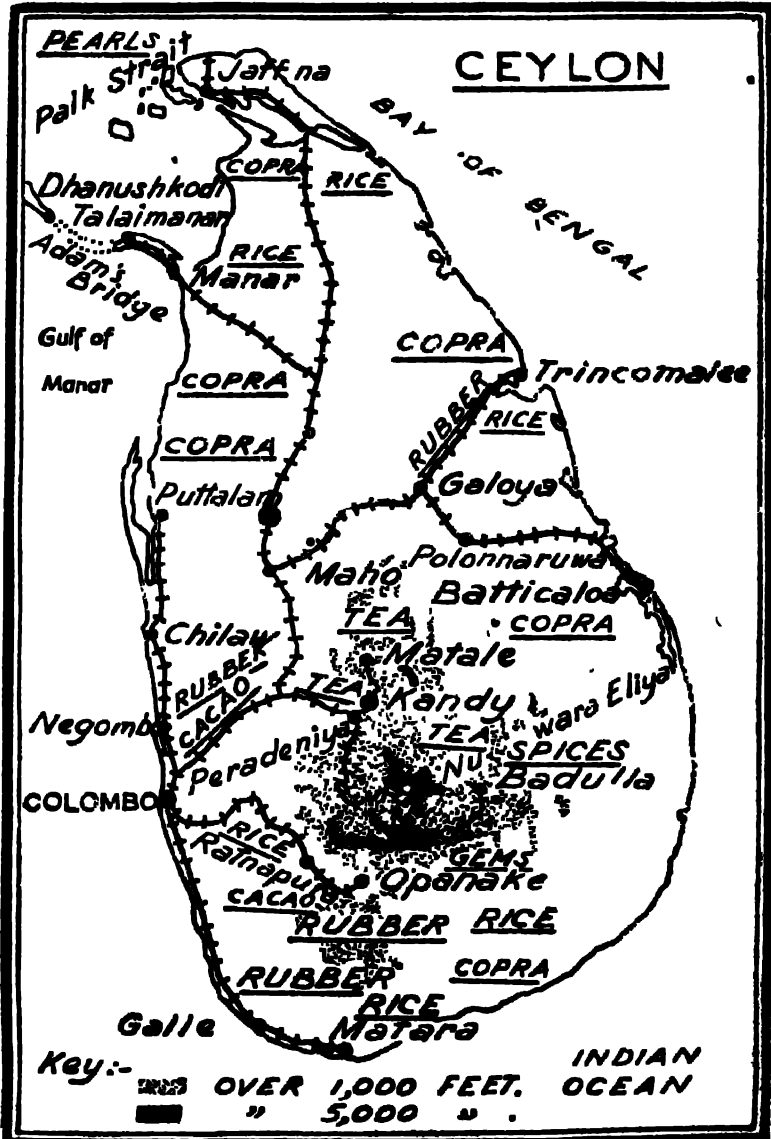


FIG. No. 139. Note the railway lines radiating from Colombo.

The population is a little over 6 millions, the south-west being the most thickly populated area. Two-thirds of the people are Singhalese and nearly one-quarter Tamils. More than half the population profess Buddhism and one-fifth Hinduism. The average density of population per square mile is 263.

Tea, rubber, copra and coconut oil are the chief items of export. With regard to tea, the future appears to be gloomy because it has lost its prestige in the foreign markets. Cinnamon, tobacco, timber and cardamon are also exported. The country imports rice, petroleum, cotton goods, motor cars, metals, coal and cement.

Colombo, the capital of Ceylon, is a great entrepot port, occupying an important location in one of the principal highways of commerce between the East and West. Its harbour is artificial, but a fine backwater encloses it. *Trincomalee*, on the north-east coast, is a port of minor importance. *Jaffna*, on the north, is an important town. *Kandy*, in the central highland, is the old capital.

India has always been playing a prominent part in Ceylon's foreign trade, though generally speaking, trade between the two countries is more competitive than complementary. Even before the War, India was Ceylon's leading supplier and in 1938 its share in the Ceylonese import trade stood at 22 per cent. In 1942 it went up to 51 per cent. India sends cotton textiles, jute, pulses, fish, fruits, vegetables, rice, wood and timber.

Indian imports from Ceylon are confined to coconut products, spices and rubber. Other imports are rubber, spices and seeds. At present the best customer of Ceylon is U. K. followed by U. S. A.

India can export silk and woollen textiles, hosiery goods, blankets, carpets and rugs, soaps, books and cutlery.

Recently Ceylon has been manufacturing acetic acid, ceramic glass, glue, hat, plywood, quinine, paper and corr. Ceylon Government has initiated in 1948 a six year economic and industrial development plan to make the country self-sufficient in essential foodstuffs.

